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A review of Southern African *Choerades* Walker, 1851 with the description of a new species (Diptera, Asilidae, Laphriinae)

Jason G. H. Londt[1,2], Torsten Dikow[3]

1 *KwaZulu-Natal Museum, P. Bag 9070, Pietermaritzburg, 3200, South Africa* **2** *School of Biological & Conservation Sciences, University of KwaZulu-Natal, Pietermaritzburg, South Africa* **3** *National Museum of Natural History, Smithsonian Institution, Washington, DC, USA*

Corresponding author: *Torsten Dikow* (dikowt@si.edu)

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Abstract

Southern African *Choerades* Walker, 1851 are reviewed. Six species are recognised (*C. analogos* **sp. n.** described from South Africa: KwaZulu-Natal, *C. bella* (Loew, 1858), *C. flavipes* (Wiedemann, 1821), *C. multipunctata* (Oldroyd, 1974), *C. nigrapex* (Bigot, 1878), *C. nigrescens* (Ricardo, 1925)) and a key for their separation is provided. Distributional information demonstrates that species are found primarily in moderate to higher rainfall regions. The little that is known of their biology is discussed. Species are usually associated with indigenous forest habitats where larval development takes place in decomposing wood.

Keywords

Afrotropical, Diptera, Asilidae, Taxonomy, Southern Africa, *Choerades*

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Introduction

Choerades Walker, 1851 is a fairly well represented genus in the afrotropics with some 25 recorded species (Londt 2015, Londt and Dikow 2017). While a modern taxonomic revision of all Afrotropical representatives is still awaited, the Southern African representatives have been reasonably well documented and a brief taxonomic history of these taxa follows:

Wiedemann (1821: 238–239) – Described *Laphria flavipes* from 'Prom. bon. sp.' [Cape of Good Hope = Western Cape of South Africa].

Macquart (1834: 286) – Described *Laphria varipes* from 'Du cap de Bonne-Esperance' [Cape of Good Hope].

Macquart (1838: 64) - Described *Laphria albimaculata* based on female specimens from 'Du Cap [South Africa] et de I'Ile Bourbon [Réunion]'.

Walker (1851) – Described *Laphria metalli* based on a female from 'Cape' [which included parts of the present day Eastern, Northern and Western Cape Provinces of South Africa] (page 105) before going on to describe *Choerades* (page 109, plate 4, fig. 8) assigning his *aurigena* Walker, 1851 from 'Java or Sumatra' to the genus. *Note*: *C. aurigena* was subsequently found to be a synonym of an Oriental species, *Laphria vulcanus* Wiedemann, 1828 (Oldroyd 1975).

Walker (1857) – Described *Laphria fortipes* from 'Port Natal' [= Durban, KwaZulu-Natal, South Africa]. *Note*: The type, originally in the W.W. Saunders collection, was presumably incorporated into the BMNH collection.

Loew (1858) - Described the female of '*Laphr. bella*' on material from 'Caffraria (Wahlb.)'. In this case Caffraria included parts of present day KwaZulu-Natal Province of South Africa (see Usher 1972).

Bigot (1878: 229) – Described *Dasythrix nigrapex*, querying its placement in the genus. He based the description on a male in his collection from 'Natal' [KwaZulu-Natal, South Africa].

Ricardo (1900: 171) – Described *Laphria aureopilosa* based on a single male from 'Durban (W.L.D.)' [initials of Mr W. L. Distant].

Bezzi (1908: 378) - Described *Laphria serpentina* based on a male from 'Congo' and female from 'Léo – Stanleyville [= Kisangani, DR Congo], Weyns'.

Ricardo (1925: 279–80) – Described four new African *Laphria* species including *nigrescens* based on ten specimens from 'Mt. Mlanje, Nyasaland [= Malawi] (S.A. Neave)'.

Bromley (1947: 112–113) – Described *Laphria variabilis* from seven specimens (holotype ♂, allotype ♀, 4♂ 1♀ paratypes) collected in and around Durban, KwaZulu-Natal, South Africa.

Oldroyd (1970) – In handling the asilids of the Congo Basin generated a key to the genera of African Laphriini (pages 224–226) as well as a key to the Ethiopian [= Afrotropical] *Laphria* species known to him. This key included the following five species then known from Southern Africa: *aureopilosa* (= *variabilis*), *bella*, *flavipes*, *nigrescens* and *serpentina*. *Note*: He separated *Dasyllina* Bromley, 1935, *Storthyngomerus* Hermann, 1919 and *Laphria* Meigen, 1803 from all other genera in his first

couplet (page 224) using the character 'proboscis flattened into a blade like a paper knife …' as opposed to 'proboscis triangular in cross-section …' as in all other genera, including *Andrenosoma* Rondani, 1856.

Oldroyd (1974: 100–102) – Discussed the synonymy of *Laphria*, mentioning *Choerades*, and suggesting that most of the Afrotropical species probably belong to the latter genus. However, he retained the South African species in *Laphria*, briefly describing *Laphria multipunctata* from 'Matjiesfontein (Turner)' and 'Seven Weeks Poort (G. van Son)', both in the Western Cape of South Africa, in a key to the South African fauna. He listed *variabilis* as a synonym of *aureopilosa* and *Dasythrix nigrapex* as a synonym of *flavipes*.

Londt (1977: 43–47) – Transferred Southern African *Laphria* species to *Choerades*, and, following Oldroyd (1974), listed six species (*aureopilosa* (with *variabilis* as synonym), *bella*, *flavipes* (with *varipes* and possibly *nigrapex* as synonyms), *multipunctata*, *nigrescens* and *serpentina*) which were separated primarily using male terminalia characteristics. The synonymy of *nigrapex* (type from 'Natal') with *flavipes* was questioned as *flavipes* had not otherwise been recorded from KwaZulu-Natal.

Oldroyd (1980) – Catalogued Afrotropical *Laphria*, listing *Choerades* as a synonym and including 35 species, nine of which were listed as recorded from Southern African countries, *i.e., albimaculata*, *aureopilosa* (with *variabilis* as synonym) *bella*, *flavipes* (with *varipes* and *nigrapex* as synonyms), *fortipes*, *metalli*, *multipunctata*, *nigrescens*, and *serpentina*.

Tomasovic (2007: 180) – Studied the lectotype of *Laphria serpentina* and transferred the species to *Andrenosoma*.

Dikow (2009) – Included the genus in a morphological phylogenetic analysis of Asilidae and placed it in Laphriinae: Laphriini confirming Oldroyd's (1970) hypothesis.

Londt (2015) – Repeated his assertion that no true species of *Laphria* are to be found in the Afrotropics and transferred nine species to *Choerades*, including two previously recorded from Southern Africa (*fortipes*, *metalli*). *L. albimaculata* was transferred to *Notiolaphria* Londt, 1977 and synonymised with *N. coerulescens* (Macquart, 1834).

Londt and Dikow (2017) – Summarised what was known about *Choerades* and included the genus in a key to all Afrotropical asilid genera.

At the commencement of this project there were, therefore, seven recognised species of *Choerades* recorded from Southern Africa (*aureopilosa*, *bella*, *flavipes*, *fortipes*, *metalli*, *multipunctata*, *nigrescens* Fig. 1). Two of these, *fortipes* and *metalli*, both described by Walker, have not been studied since the publication of their descriptions and it is now believed that the type material, which one suspects should be housed in the Natural History Museum in London (BMNH), is probably lost. Walker's rather superficial description of *Laphria metalli*, probably based on a single female, might suggest *Choerades*, but this almost entirely black species is probably too large, with a body length of '12 lines' (*c.* 2.5 cm) and a wingspan of '23 lines' (*c.* 4.9 cm), to be confused with any of the species (*nigrapex*, *flavipes*, *multipunctata*) now known to inhabit the area formerly known as the 'Cape' (*i.e.* South Africa's Western Cape Province and possibly parts of the Eastern and Northern Cape Provinces). Until such time as the type material can be traced and studied it is considered best to consign this species to the list of 'Unplaced

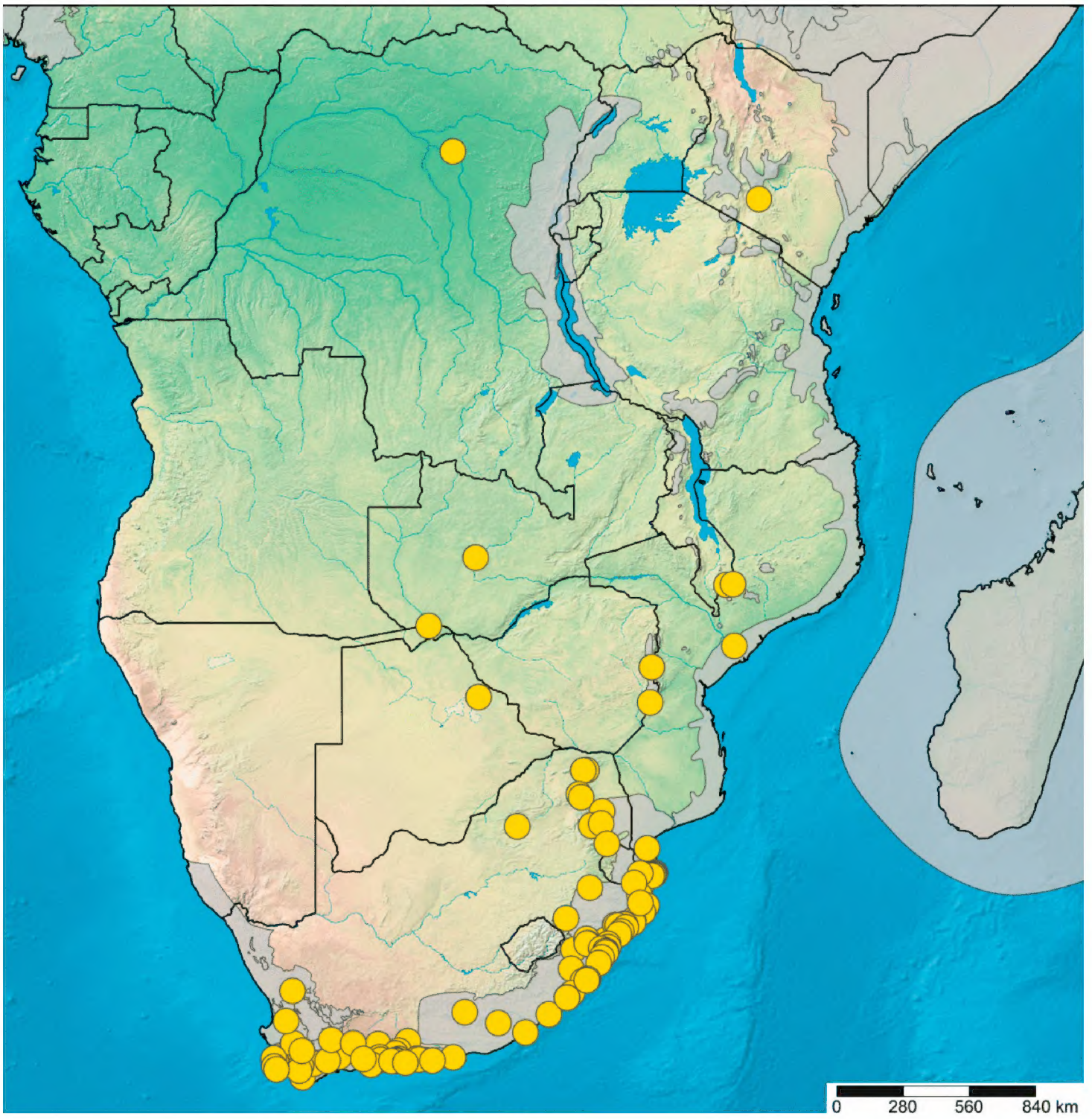


Figure 1. Map of southern parts of the Afrotropical Region with elevational relief, Biodiversity Hotspots (*sensu* Conservation International in grey), and distribution of Southern African *Choerades* specimens (SimpleMappr 10187, map data also available in Google Earth KML format 10187).

species' generated by Oldroyd (1980: 373) and updated by Londt and Dikow (2017: 1113). Walker's description of *Laphria fortipes* Walker, 1857 from 'Port Natal' (Durban) is perhaps better in that all aspects of the description agree well with the male of *Laxenecera albicincta* (Loew, 1852), a widespread species also originally described in *Laphria*, on material from Mozambique. While it is tempting to contemplate placing *fortipes* in the synonymy of *Laxenecera albicincta*, Walker was clearly familiar with *Laxenecera* as he published descriptions of species in this genus in 1855. Again, the conservative approach would be to merely list *fortipes* as an 'Unplaced species' until such time as the type material becomes available for study. Clearly, in the absence of Walker's types it is not possible to include his two species, *fortipes* and *metalli*, in this study.

Materials and methods

Terminology follows mainly that proposed by McAlpine (1981), Wootton and Ennos (1989, wing venation), Stuckenberg (1999, antennae), Cumming and Wood (2017) as well as that used by the authors in more recent publications. Specimens available for study are housed in the following institutions (names of assisting curators in brackets):

BMNH The Natural History Museum, London, U.K. (Erica McAlister).
BMSA National Museum, Bloemfontein, South Africa (Burgert Muller).
DMSA Durban Natural Science Museum, Durban, South Africa (Natasha Govender).
MRAC Musee Royal de l'Afrique Centrale, Tervuren, Belgium (Kurt Jordaens).
NMSA KwaZulu-Natal Museum, Pietermaritzburg, South Africa (Kirstin Williams).
OXUM Oxford University Museum of Natural History, Oxford, U.K. (Zoë Simmons).
SAMC Iziko South African Museum, Cape Town, South Africa (Simon Van Noort, Aisha Mayekiso).
SANC South African National Collection of Insects, Pretoria, South Africa (Vivienne Uys).
USNM National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A.
ZMUC Natural History Museum of Denmark, University of Copenhagen, Denmark (Thomas Pape).

Material listed for each species is arranged according to geographical coordinates within countries (alphabetically). Material previously listed by Londt (1977) is relisted followed by an asterisk (*). Label data relating to sampling events and type designations are usually cited as appearing on labels, lines of data being separated by a slash (/), data appearing on the reverse side of labels is indicated by the symbol ~. Unique specimen identifiers, when available, are also provided. To save space, labels relating to previous identifications are excluded unless they cite names not currently accepted as valid. While more recently collected material is frequently provided with detailed information relating to locality and habitat, it has been necessary to attempt to establish reasonably accurate geographic coordinates for older or relatively poorly documented specimens in order to gain a better understanding of distribution. Google Earth and the Internet have been used to accomplish this. Relevant information not appearing on labels is provided in square brackets. Wings were detached and placed in alcohol between two glass slides for photography before being dried and reattached to their respective specimens. Terminalia were excised and macerated in hot Potassium Hydroxide (KOH), drawn with the aid of a drawing tube before being stored in micro vials attached to specimen pins. Wing length was measured from the humeral crossvein to tip and the breadth was determined at the maximum extent. Whole habitus photographs of pinned specimens were taken in two labs with different equipment. A GIGAmacro Magnify^2 system, a Canon EOS D5 full-frame DSLR, a Canon MP-E 65 mm f2.8 macro-lens and illuminated by a twin-flash was used for the specimens

photographed at the USNM. Here, individual RAW format images were stacked using HeliconFocus Pro (version 6.7.1) utilising Method C (pyramid) and exported in Adobe DNG-format. The scale was added with HeliconFocus Pro. Other photographs of specimens at the NMSA were taken with a stereo microscope and attached digital camera. No scale was added to these photographs.

Some of the photographs have been deposited in Morphbank: Biological Imaging. These images will be automatically harvested by the Encyclopedia of Life (EOL) and are available under the respective species page. The dichotomous, interactive key has been built with Lucid Phoenix and can be accessed on Lucidcentral and the junior author's research web-site. The occurrence of all species is illustrated in distribution maps plotted with SimpleMappr with all of those localities for which co-ordinates are available. Type localities are plotted with a square symbol while all other specimens are plotted with a circular symbol. The distribution map includes Biodiversity Hotspots *sensu* Conservation International (Mittermeier et al. 1998, Myers et al. 2000, Mittermeier et al. 2005). All taxon names have been registered in ZooBank (Pyle and Michel 2008).

Data resources

Morphbank: image collection ID – 861932.
Lucid Phoenix: illustrated, dichotomous identification key – http://keys.lucidcentral.org/keys/phoenix/choerades/
SimpleMappr: distribution maps – 10187 as in Fig. 1 (Google Earth KML format 10187), 10189 as in Fig. 27 (KML format 10189), 10190 as in Fig. 28 (KML format 10190)

Results

Taxonomy

Choerades Walker, 1851

http://zoobank.org/0AFCA8C4-4395-4938-9288-29C7CF73BE32

Choerades Walker, 1851: 109. Type species: *Choerades aurigena* Walker, 1851 [= *Laphria vulcanus* Wiedemann, 1828 (Oriental)], by monotypy.

Diagnosis. The following diagnosis is compiled from key characters used by Londt & Dikow (2017) and other characters common to all Afrotropical species. Usually shiny black flies, ranging from 1–2 cm in length and slightly dorsoventrally flattened, with the following combination of characters.

Head: Antennal postpedicel at most twice as long as scape and pedicel combined; postpedicel with terminal pit enclosing a seta-like sensory element; facial protuberance

well-developed in dorsal and ventral regions (depressed centrally); face with shiny scale-like setae laterally, adjacent to eye margin (Figs 16–17); proboscis long, straight, narrow and laterally compressed (knife-like, Figs 16–17); maxillary palpus cylindrical, 2-segmented.

Thorax: Prosternum fused to proepisternum; postmetacoxal area membranous; anepisternum with at least one macroseta at supero-posterior angle, in front of wing insertion. Mesonotum and scutellum commonly covered with fine, shiny yellow setae (Figs 14, 18).

Legs: Usually predominantly black, but femora and tibiae may be partly or extensively yellow (Figs 15, 19); prothoracic tibia without spine-like processes; metathoracic femur not obviously expanded medio-distally, with regular ventro-distal macrosetae (*i.e.* not inserted on tubercles); claws and pulvilli present and well-developed.

Wings (Figs 3–8): Alula well-developed; cells r_1, m_3 and cua closed and stalked.

Abdomen: Tergite 2 wider than long; sternite 1 confined beneath tergite 1; ovipositor short and not markedly tubular.

***Choerades analogos* sp. n.**
http://zoobank.org/0875F465-8466-43B9-A87C-BAEA4C6FDFE9
Figs 2, 3, 13, 27

Laphria serpentina: Oldroyd 1970: 227 (key); 1974: 102 (key).
Choerades serpentina: Londt 1977: 47 (fig. 5 ♂ terminalia).

Taxonomy. Since the reallocation of *Laphria serpentina* Bezzi, 1908 to *Andrenosoma* by Tomasovic (2007) the published records of this species by Oldroyd (1974) and Londt (1977) clearly require re-evaluation. These specimens (listed below) clearly belong to *Choerades* and so were incorrectly assigned to *serpentina* at those times. Until such times as a complete review of the Afrotropical fauna is undertaken it is appropriate to provide this fairly distinctive Southern African species with a name.

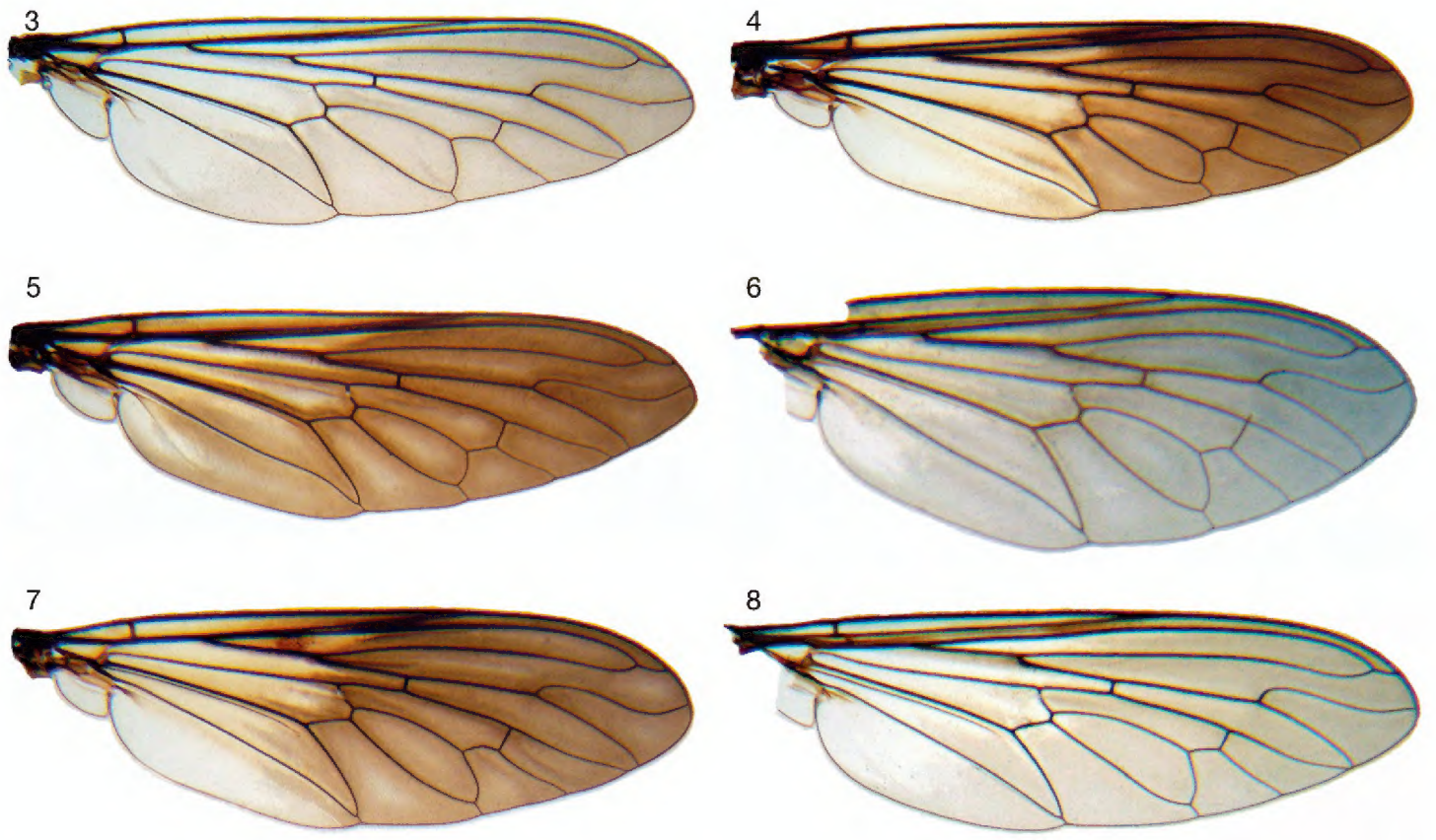
Etymology. Gr. *analogos* – resembling. Refers to the superficial resemblance of this species to *Andrenosoma serpentina*.

Description. Based on all material studied. Entire holotype as illustrated (Fig. 2).

Head: Black, silver pubescent, black and white setose. Antenna black, scape and pedicel black setose (a few white setae may be present). Face black, silver pubescent. Mystax predominantly black (a few white setae may be present) with macrosetae confined to elevated parts of facial protuberance. Lateral parts of face with groups of glistening silvery scale-like setae. Frons and vertex silver pubescent, largely asetose except for black setae adjacent to eye margins. Ocellar tubercle prominent, weakly setose except for a pair of strong ocellar macrosetae. Occiput silver pubescent, strongly setose (black dorsally, white ventrally). Palps black and white setose.

Thorax: Black, silver pubescent, black and white setose. Cervical sclerite black and white (♀) or entirely white (♂) setose. Mesonotum weakly silver pubescent, predominantly black setose. Lateral macrosetae black (2 notopleurals, 3 supra-alars, 4 postalars). Scutellum black, disc fine silver pubescent, fine white setose, apical parts

Figure 2. *Choerades analogos* sp. n. entire Holotype ♂ (NMSA-DIP-08852).



Figures 3–8. *Choerades* species, wing venation. **3** *C. analogos* sp. n. (NMSA-DIP-08848) **4** *C. bella* (NMSA-DIP-81712) **5** *C. flavipes* (NMSA-DIP-81800) **6** *C. multipunctata* (SAM-DIP-A007985) **7** *C. nigrapex* (NMSA-DIP-81691) **8** *C. nigrescens* (NMSA-DIP-81822).

shiny apubescent, *c.* 12 apical scutellar macrosetae (may be black and white or entirely white). Pleura silver pubescent, fine black and white setose. 1–3 black anepisternal macrosetae. Katatergal setae well-developed, mostly black (dorsally) and white (ventrally). Anatergites weakly silver pubescent, asetose.

Legs: Entirely black, coxae silver pubescent, other segments apubescent. Trochanters white setose, femora and tibiae black and white setose, tarsi black setose.

Wings (Fig. 3): Length (humeral crossvein to tip) x breadth (maximum): Holotype ♂ 10.9 × 3.6 mm, paratype ♂ 11.9 × 4.1 mm, paratype ♀ 12.3 × 4.3–13.4 × 4.5 mm. Veins black, membrane transparent, distal two-thirds microtrichose, basal cells almost devoid of microtrichia except distally.

Abdomen: Black, T1–2 weakly silver pubescent, black and white setose. T1 with 2–4 black and/or white discal macrosetae. T1–2 long white setose (setae somewhat recumbent).

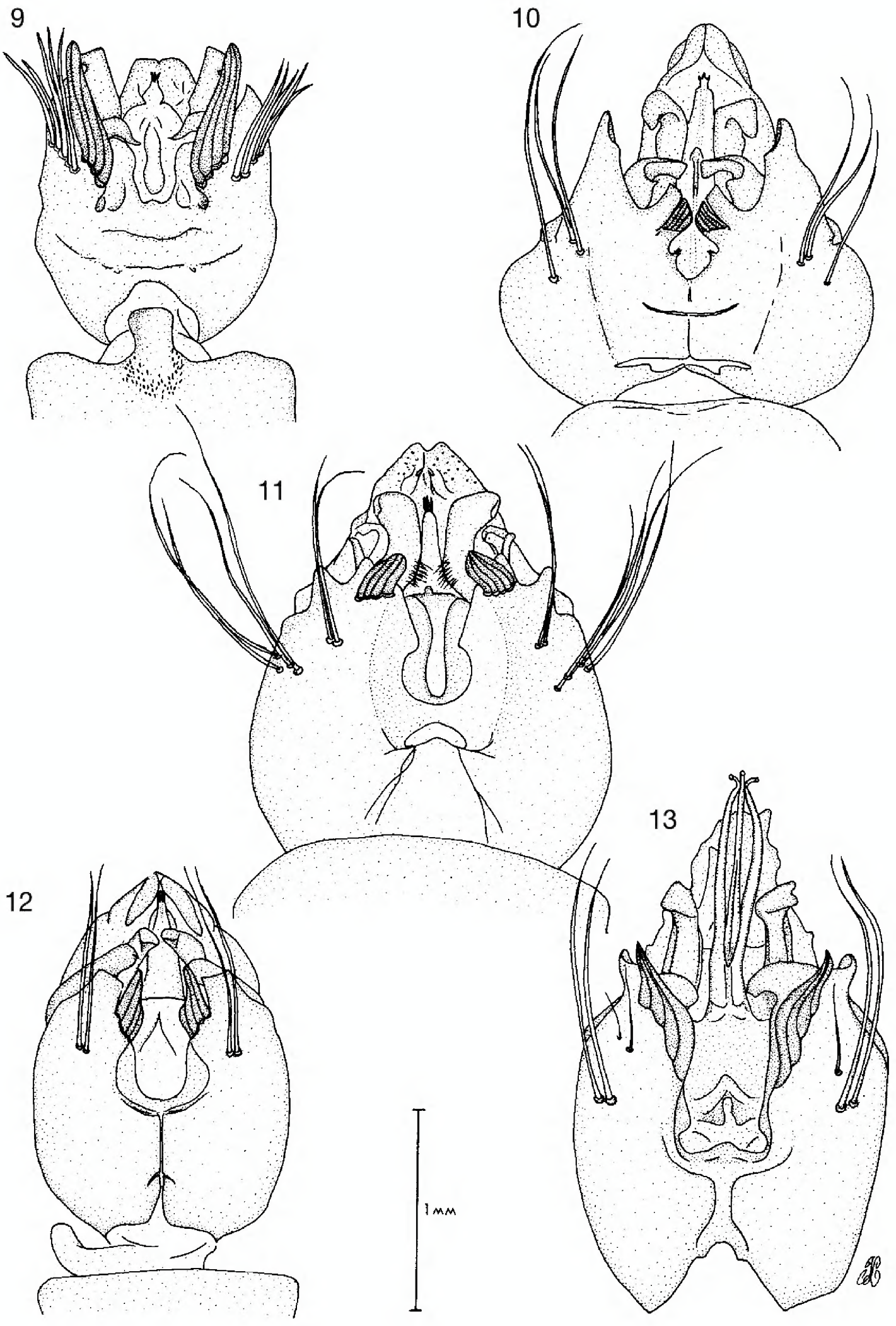
Terminalia: ♂ terminalia as in Fig. 13 (previously published as fig. 5 by Londt (1977) for *C. serpentina*). Hypopygium rotated through 180°. Gonocoxites abut ventrally, apparently partly fused medially, hypandrium apparently absent. *Note*: In contrast to other Southern African species *analogos* sp. n. possesses an exceptionally long aedeagus that projects far beyond the level attained by the gonostyli. Like *nigrescens* and *multipunctata* there is a single pair of exceptionally long, closely associated macrosetae at about midlength on the ventral face of the gonocoxite.

Type material. Holotype: SOUTH AFRICA: 1♂ 'KwaZulu Natal, RSA / Fanies Island [*c.* 28°06'S, 32°27'E 5m] St / Lucia 10–15/2/1997 / Coll. A Weaving', 'Dip 7', 'Prey identification / Order: Hemiptera / Family: Flatidae / Other: / Det: JGH Londt', '*Choerades* / *serpentina* / Bezzi, 1908 / Det. JGH Londt', NMSA-DIP-08852, (NMSA).

Paratypes: NAMIBIA: 1♀ 'Katima Mulilo [*c.* 17°30'22"S, 24°16'50"E 950m] / SE 2417Ad 6/I/1981, C.L. v/d Hoven / Dept. of Entomology / University of Pretoria', '*Choerades* / *serpentina* / Bezzi, 1908 / Det. JGH Londt', NMSA-DIP-08848 (NMSA); SOUTH AFRICA: 1♀ 'South Africa: Natal / False Bay Park [*c.* 27°58'34"S, 32°21'47"E 35m] 2732CD / 11.ii.1988 A.J. Lambiris / 27°59'30"S, 32°21'45"E / Flew into car. Woodland', '*Choerades* / *serpentina* / Bezzi, 1908 / Det. JGH Londt' NMSA-DIP-81675 (NMSA); 1♂ 'Dukuduku Nat. [State Forest *c.* 28°21'53"S, 32°20'10"E 35m] / 22–24.iii.1968 / Potgieter & Goode', 'Collection / Transvaal / Museum', '*Laphria* / *serpentina* Bezzi / det. H. Oldroyd, 1972', '*Choerades* / *serpentina* / Bezzi, 1908 / Det. JGH Londt', NMSA-DIP-08849 (NMSA)*.

Additional studied material without type status. DEMOCRATIC REPUBLIC OF CONGO: 1♀ 'Paratypus' [of *Laphria serpentina* Bezzi, 1908], 'Musee / Du Congo-Belge / Leo-Stanleyville [c. 00°30'59"N, 025°12'00"E] / Weyns', 'R. Det. / 243' (MRAC).

Note: Bezzi (1908) based his description of *serpentina* on two specimens. The male 'Type' was given Lectotype status by Tomasovic (2007) when he transferred the species to *Andrenosoma*. The female 'Paratypus', listed above, was not mentioned by Tomasovic (2007). This specimen, which accompanies the male, is clearly not conspecific and definitely belongs to *Choerades*. While it appears to represent the species here called *analogos* sp. n. it falls outside the area covered by this study and could therefore represent another species. A complete review of the Afrotropical fauna is necessary to provide taxonomic stability.



Figures 9–13. *Choerades* ♂ terminalia (ventral views) as previously published by Londt (1977). **9** *C. nigrapex* (NMSA-DIP-08832) **10** *C. bella* (NMSA-DIP-08897) **11** *C. flavipes* (NMSA-DIP-08864) **12** *C. nigrescens* (NMSA-DIP-08880) **13** *C. analogos* sp. n. (NMSA-DIP-08849). Scale bar: 1 mm.

Table 1. Phenology of Southern African *Choerades* species (Abbreviations of months start at July, numbers relate to records for each month). All available data included.

Species	J	A	S	O	N	D	J	F	M	A	M	J
analogos sp. n.	–	–	–	–	1	–	1	2	1	–	1	–
bella	–	–	2	8	16	16	17	2	–	–	–	–
flavipes	1	–	3	4	8	20	13	3	2	–	1	–
multipunctata	–	–	–	8	2	–	–	–	–	–	–	–
nigrapex	–	–	1	10	11	25	10	14	12	2	–	–
nigrescens	–	–	–	–	13	6	2	4	1	–	–	–
Totals	**1**	**0**	**6**	**30**	**51**	**67**	**43**	**25**	**16**	**2**	**2**	**0**

Additional material not studied. Oldroyd (1974: 102) lists material from 'Mt Mlanje [*c.* 15°56'55"S, 35°35'26"E 2940m] (Neave)'. The senior author has seen photographs of the following specimens, identified as *serpentina*, which will need careful reexamination when the entire Afrotropical fauna is reviewed.

MALAWI: 1♀ '*Laphria* / *serpentina* Bezzi / det. H. Oldroyd, 1963', 'Mlanje [*c.* 15°56'55"S, 35°35'26"E 2940m] / Nyasaland [= Malawi] / 12.11.1914 / S.A. Neave', 'Pres. by / Imp. Bur. Ent. . Brit. Mus. / 1923-340', '*serpentina* / [illegible]', 'NHMUK012810848' (BMNH); 1♀ 'Nairobi [*c.* 01°17'32"S, 36°49'19"E 1680m] / 25.5.06', 'F.J. Jackson Coll. / Brit Mus. / 1939-398', 'NHMUK012810849' (BMNH).

Distribution, phenology and biology. A poorly-collected species with an apparently wide Southern African distribution (Fig. 27, see also Fig. 1 for DR Congo and Kenya records) involving South Africa (KwaZulu-Natal) and Namibia. Available data suggest adults are active during late summer (Table 1). The species is apparently associated with forested habitats. *C. analogos* sp. n. is distributed within the Maputaland-Pondoland-Albany biodiversity hotspot, but also occurs outside of it. A single prey record is known (Hemiptera: Flatidae).

Choerades bella (Loew, 1858)

http://zoobank.org/4C7B3967-18AA-41E2-8E77-BF4F1BCD3215
Figs 4, 10, 14–19, 27

Laphria bella Loew, 1858: 356 [1860*c*: 190]; Oldroyd 1970: 226 (key).
Choerades bella: Londt 1977: 46 (fig. 2 ♂ terminalia).

Redescription. Based on all material studied. Entire male and female specimens are shown in Figs 14–19.

Head: Black, silver pubescent, black and pale yellow setose. Antenna black, scape and pedicel black setose. Face black, fine silver pubescent. Mystax predominantly black (a few yellow setae may be present in dorsal region) with macrosetae confined to elevated parts of facial protuberance. Lateral parts of face with groups of glistening gold and silvery scale-like setae. Frons and vertex fine dull silver pubescent, asetose. Ocellar tubercle prominent, weakly setose except for a pair of strong black ocellar macrosetae. Occiput silver pubescent, strongly setose (black dorsally, yellow ventrally). Palps black and pale yellow setose.

Figure 14–19. *Choerades bella* ♂ (USNMENT00870303) **14** dorsal (Morphbank #861929) **15** same, lateral (#861931) **16** same, head anterior (#861927), ♀ (USNMENT00870304) **17** head anterior (#861925) **18** same, dorsal (#861921) **19** same, lateral (#861923). Scale bar: 5 mm.

Thorax: Black, silver pubescent, black, pale yellow and white setose. Cervical sclerite entirely black setose. Mesonotum apubescent except for silver pubescent postpronotal lobes, fine black and longish prostrate yellow-white setae posteriorly (distribution of yellow setae variable). Lateral macrosetae black (2 notopleurals, 4 supra-alars, 2 postalars). Scutellum black, apubescent, disc almost entirely covered with longish, prostrate, white-yellow setae, *c.* 10 apical scutellar macrosetae (mostly yellow, some black). Pleura silver pubescent, mostly fine black setose (few pale yellow setae). 1–3 black anepisternal macrosetae. Katatergal setae well-developed, black. Anatergites weakly gold pubescent, asetose.

Legs: Black and orange (somewhat variable), coxae silver pubescent, other segments apubescent. Trochanters pale yellow setose, femora and tibiae black and yellow setose, tarsi black setose.

Wings (Fig. 4): Length (humeral crossvein to tip) x breadth (maximum): ♂ 9.1 × 3.0 – 12.3 × 4.3 mm (mean – 5 specimens – 10.4 × 3.5 mm), ♀ 8.4 × 2.8 – 12.3 × 4.2 mm (mean – 5 specimens – 10.3 × 3.4 mm), males and females vary fairly considerably in size but on average of similar size. Veins dark red-brown to black, membrane transparent, distal two-thirds pale brown microtrichose, basal cells almost devoid of microtrichia except distally.

Abdomen: Black, mostly dark red-brown to black setose (T1 with lateral tufts of pale yellow setae), tergites apubescent, sternites fine gold pubescent.

Terminalia: ♂ terminalia as in Fig. 10 (previously published as fig. 2 by Londt (1977)). Hypopygium rotated through 180°.

Material examined. SOUTH AFRICA: 1♀ 'South Africa, Tvl / Entabeni For. Res. [*c.* 22°59'09"S, 30°16'08"E 1370m] / 33.00S 30.16E [?] / 7–11.i.1987 / V.M. Uys', NMSA-DIP-81739 (NMSA); 2♂ 2♀ 'S. Africa: Transvaal / Entabeni Forest Stn. / Zoutpansberg Range / Jan. 1975 Stuckenberg / indigenous forest', 'Verakop / Forest [1♂ 1♀]', NMSA-DIP-08909 [1♂] NMSA-DIP-81742–4 (NMSA)*; 1♂ 'South Africa, TVL., / Entabeni Forest Res. / Soutpansberg, 23.00S / 30.16E. 18–19.i.1982 / C.D. Eardley', 'National Coll. / of Insects / Pretoria. S. Afr.', SANC-DIPT-02270 (SANC); 3♀ 'Malta [Forest *c.* 23°54'35"S, 29°58'20"E 1420m], Ptbg. [Pietersburg = Polokwane] / Jan. 1928 / G. v. Son', 'Collection / Transvaal / Museum', NMSA – 08901 [1♀] NMSA-DIP-81745–6 (NMSA)*; 1♂ 'Malta, Ptbg. / 3/II.1927 / G. v. Son', 'Coll. / Tr / Mus', NMSA – 08905 (NMSA)*; 2♀ 'South Africa: Tvl / Wolkberg, S. Tsaneen / 24°01'S, 30°04'S [error E] / 6–14.xii.1986 / RH Watmough', 'National Coll. / of Insects / Pretoria. S. Afr.' (SANC); 1♀ 'Mariepskop [*c.* 24°33'12"S, 30°52'13"E 1870m], E.Tvl. / 28.xi.1968 / H.K. Munro', 'National Coll. / of Insects / Pretoria, S. Afr.', 'Prey Identification / Ord: Diptera / Fam: Bibionidae / Det. J.G.H. Londt', 'Prey Catalogue / No. 001398', NMSA-DIP-08910 (NMSA); 1♂, Mac Mac Pools [*c.* 25°00'52"S, 30°49'53"E 1345m], 20.xi.1975, J.G.H. Londt (NMSA)*; 1♂ 'Lydenburg [*c.* 25°05'39"S, 30°27'20"E 140m] / Distr. 1896 / P.A. Krantz.', NMSA-DIP-08897 (NMSA)*; 1*? 'Transvaal / Mac Mac Pools [c. 25°00'53"S, 30°49'52"E] / 20.XI.1975 J.G.H. Londt' NMSA-DIP-77611 (NMSA); 1♀ 'S Africa: Natal #7 / Nkandla Forest / 28°38'S, 29°30'E 900m / Date: 9.i.1982 / R. Miller & P. Stabbins', NMSA-DIP-08879 NMSA-DIP-81751 (NMSA); 1♂ 1♀ 'Barberton [*c.* 25°47'10"S, 31°03'11"E 840m] / E-Transvaal / 14.10.1978 / H. Geertsema', 'SANC DIPT02269 [♀ – no number on ♂]' (SANC); 1♂ 'South Africa KwaZulu-Natal / forest N Klipplaatdrift Farm/ 17 km N Utrecht 1700 m / 27°27.61'S, 30°24'E /leg. T. Dikow 30.XI.1999' USNMENT00870303 (USNM); 1♀ 'South Africa KZ-Natal / Ongoye (Ngoye) Forest / 28°50'S, 31°44'E, 300m asl / Eastern side of forest. / 21.x.2008. G.B.P. Davies', 'National Coll. / of Insects / Pretoria. S. Afr.' (SANC); 2♀ 'S Africa: Natal / Ngoye forest [*c.* 28°50'34"S, 31°42'09"E 395m] / Low shrubs / 9–10.Jan.1980 / R. Oberprieler', NMSA-DIP-08887 NMSA-DIP-81752 (NMSA); 2♀ 'South Africa KwaZulu-Natal / Ongoye (Ngoye) Forest, near / Eshowe, 2831DC; main track / thru' forest; on low saplings, / 29.ix.2006; G.B.P. Davies' [1♀ with small alate Isopteran] NMSA-DIP-81754–5 (NMSA); 1♀ 'South Africa: Natal / Entumeni Nature Res. [*c.* 28°53'13"S, 31°22'17"E

670m] / 28°32'35"S, 31°22'54"E [sic] / J. Londt 26.i.1988 / Coast Scarp Forest', NMSA-DIP-08883 (NMSA); 1♀ 'Upper Tongaat [*c.* 29°26'00"S, 31°01'00"E 440m] / Natal / Nov. 1919 / C,N. Barker / 2479', SAM-DIP-A007970 (SAMC); 1♀ 'South Africa: Natal / Ferncliffe Forest Res / 29°33'00"S, 30°20'30"E / 975m J.G.H. Londt / Mistbelt Mixed Forest / Date: 23.xi.1987', NMSA-DIP-08890 (NMSA); 1♂ 'S Africa: Natal #5G / Ferncliffe N. R. / 29°33'S, 30°20'E m [*c.* 975m] / Date: 12/12/1993 / Coll: K.R. Cradock', NMSA-DIP-08894 (NMSA); 1♀ 'South Africa: Natal / Pietermaritzburg / 2930Cb 28.xi.1978 / J.G.H. Londt / Town Bush [*c.* 29°33'00"S, 30°20'30"E 975m]', NMSA-DIP-08911 (NMSA); 1♂ 1♀ 'Town Bush / Pietermaritzburg / South Africa / B. & P. Stuckenberg / xi.1959', NMSA – 08896 [♂] NMSA-DIP-81761 (NMSA)*; 1♀ 'Captured / with prey', 'South Africa: Natal / Pietermaritzburg / 2930Cb 14.xii.1978 / J.G.H. Londt / Town Bush', 'Prey Identification / Order: Hymenoptera / Family: Formicidae / Det. J. Londt', 'Prey Catalogue / No. 0147', NMSA-DIP-08886 (NMSA); 1♀ 'South Africa: Natal / Pietermaritzburg / Townbush Valley / RM Miller+malaise / November 1976', NMSA-DIP-08913 (NMSA)*; 1♀ 'South Africa: Natal / Pietermaritzburg / 2930Cb 12.xi.1988 / J.G.H. Londt / Town Bush' NMSA-DIP-77610 (NMSA); 1♀ 'South Africa KwaZulu-Natal / Pietermaritzburg / Ferncliff Nature Reserve [c. 29°33'14"S, 030°19'51"E] / leg. J. Londt 30.x.1999' USNMENT00870304 (USNM); 1♀ 'South Africa: KwaZulu-Natal / Queen Elizabeth Park Res. / 29°34.157'S, 030°19.299'E / 856m 1–5.xii.2003 / JGH Londt & M Mostovski / Forest patch Malaise trap' NMSA-DIP-81764 (NMSA); 1♂ (in ethanol) 'South Africa: KwaZulu-Natal: / Natal National Botanical Gardens, / Pietermaritzburg, 29°36'10"S, 030°20'45"E, 741 m / 11.i.2004 J. Londt, T. Dikow' USNMENT00914044 (USNM); 1♀ 'S Africa: KZ-Natal #143 / Umhlanga Bush Nat. Res. / 29°43'S, 31°05'E 0m / Date: 4.xii.1995 / Coll: D.A. Barraclough', NMSA-DIP-08893 (NMSA); 1♀ 'S Africa KwaZulu-Natal / Marutswa Forest Reserve / 29°48'29"S, 29°47'04"E / J & A Londt 23.i.2015 / 1455m *Podocarpus* forest', NMSA-DIP-81781 (NMSA); 1♀ 'Bluff [*c.* 29°55'19"S, 31°00'18"E 30m] / Durban / 8-10-16 / C.N. Barker', SAM-DIP-A007965 (SAMC); 1♀ 'Durban / Natal / 20-12-19 / C.N. Barker / Bluff / 2499', SAM-DIP-A007971 (SAMC); 1♀ 'S Africa: Natal #88 / Weza State Forest / 30°32'S, 29°42'E 1220m / Date: 21–22.xi.1991 / Coll: D.A. Barraclough / Indig. Forest margin', NMSA-DIP-08885 (NMSA); 1♂ 'South Africa / KwaZulu-Natal / Mvutshini Valley, Ramsgate / 30°53'30"S, 30°20'43"E / WGS84 Datum 31m', '25-Nov-2003 / Armstrong AJ / EKZN Record ID: 170409 / forest / under bark of dead tree', NMSA-DIP-08908 (NMSA); 1♀ 'South Africa: Natal / Umtamvuna Nat. Res. / 3030cc 14.i.1981 / J.G.H. Londt forest' NMSA-DIP-77612 (NMSA); 1♀ 'S Africa: KZ-Natal #140 / Umtamvuna Nat. Reserve / 31°00'S, 30°09'E 200m / Date: 23.xi.1995 / Coll: D.A. Barraclough / Shaded indigenous forest', NMSA-DIP-08903 (NMSA); 3♂ 'S Africa. Transkei / Mbotji Forest [*c.* 31°27'42"S, 29°43'31"E 60m] / 15–16 Dec. 1979 / L. Schoeman', NMSA-DIP-81769–81770, NMSA-DIP-77613 (NMSA); 1♀ 'Prt. St. John [Port St. Johns *c.* 31°37'44"S, 29°32'13"E 100m] / x.1916 / H.H. Swinny', NMSA-DIP-08892 NMSA-DIP-81771 (NMSA)*; 1♀ 'Port St Johns / 3129DA / 16.i.1970', 'Collectors / B. & P. Stuckenberg', NMSA-DIP-08912 (NMSA)*; 1♀ 'Port St. Johns Dist. / Coastal Forest / E. Cape Prov / 16–17 Oct. 1959 / B. & P. Stuckenberg', NMSA-DIP-08891 (NMSA)*; 1♀ 'Port St Johns / Dec. 1961 / F and

S Gess', SAM-DIP-A007969 (SAMC); 1♀ 'Transkei #83 / Dweza Nature Reserve / 32°16'S, 28°51'E 50m / Date: 17–20.xi.1991 / Coll: D.A. Barraclough / Indig. Forest & margin', NMSA-DIP-08877 (NMSA); 3♀ 'South Africa: Cape Prov / Hogsback [*c.* 32°35'43"S, 26°55'56"E 1235m] 3226DB / 13–16.xii.1985 / J. & B. Londt Forest / & forest margins', 'Prey Catalogue / No. 0496 [small coleopteran]', NMSA-DIP-08878 [1♀] NMSA-DIP-81775 & 7 (NMSA); 1♀ 'East London [*c.* 33°01'45"S, 27°51'17"E 85m] / 11.11.24 / H.K. Munro', NMSA-DIP-08902 (NMSA)*; 1♂ '863', 'Ex coll / Transv. Mus.', '*bicranotaphria* [?] / *bella* Lw. ♂', NMSA-DIP-81779 (NMSA).

Additional material not studied. The senior author has seen photographs of the following additional specimens. SOUTH AFRICA: 1♂ 'Pienaars Riv [*c.* 25°07'26"S, 27°38'37"E 1040m] / [*illegible*]', 'S. Africa / Distant Coll. / 1911-383', 'NHMUK012810865' (BMNH); 1♀ 'Karkloof [*c.* 29°23'58"S, 30°16'41"E 1035m] / Natal / Feb. 1897 / G.A.K. Marshall / 1903-17', 'Karkloof / Natal 2.97', 'NHMUK012810866' (BMNH); 1♀ 'S. Africa / R.E. Turner / Brit. Mus. / 1924-6', 'Port St. John [Port St. Johns *c.* 31°37'44"S, 29°32'13"E 100m] / Pondoland / Nov. 1923', 'NHMUK012810862' (BMNH); 1♀ 1♂ 'Port St. John / Pondoland / Dec. 1923', 'S. Africa / R.E. Turner / Brit. Mus. / 1924-54', 'NHMUK012810863, 012810867' (BMNH); 1♀ 'Port St. John / Pondoland / Oct. 1923', 'S. Africa / R.E. Turner / Brit. Mus. / 1923-547', 'NHMUK012810864' (BMNH).

Distribution, phenology and biology. A relatively well-collected South African endemic with an extensive distribution extending from the northern parts of Limpopo Province, through much of KwaZulu-Natal and terminating in the Eastern Cape Province (Fig. 27). Data indicate that adults have a relatively long period of activity ranging from September through to February, with a peak in December (Table 1). The species inhabits indigenous forests with adults frequently found sunning themselves on vegetation. *C. bella* is primarily distributed within the Maputaland-Pondoland-Albany biodiversity hotspot, but also occurs outside of it. The three available prey records (Diptera: Bibionidae, Coleoptera: small unidentified beetle, Hymenoptera: alate Formicidae) suggest a wide range of flying insects.

***Choerades flavipes* (Wiedemann, 1821)**

http://zoobank.org/8C795C74-C733-4B75-BE80-43BF07A4C753

Figs 5, 11, 20, 27

Laphria flavipes Wiedemann, 1821: 238; Loew 1858: 355; Oldroyd 1970: 227 (key); 1974: 100–102 (key fig. 94 head)).
Laphria varipes Macquart, 1834: 286; Loew 1858: 356.
Choerades flavipes: Londt 1977: 46 (fig. 3 ♂ terminalia).

Redescription. Based on all material studied. An entire male specimen is shown in Fig. 20.

Head: Black, silver and gold pubescent, black and white setose. Antenna black, scape and pedicel black setose. Face black, fine silver pubescent, depressed centrally. Mystax predominantly black (a few white setae may be present ventrally) with macro-

Figure 20. *Choerades flavipes* entire ♂ (NMSA-DIP-08866).

setae confined to elevated parts of facial protuberance. Lateral parts of face with groups of glistening silvery scale-like setae. Frons and vertex dull gold pubescent, largely asetose except for black setae adjacent to eye margins. Ocellar tubercle prominent, weakly setose except for two pairs of strong ocellar macrosetae. Occiput silver pubescent, strongly setose (black dorsally, white ventrally). Palps black and white setose.

Thorax: Black, silver pubescent, black, white and yellow setose. Cervical sclerite black setose. Mesonotum largely apubescent except for silver pubescent postpronotal lobes and surrounding area, entirely black setose. Lateral macrosetae black (2–3 notopleurals, 5–6 supra-alars, 4–5 postalars). Scutellum black, disc shiny apubescent, sparsely short black setose, *c.* 16 black apical scutellar macrosetae. Pleura silver pubescent, fine black and white setose. 1–3 black anepisternal macrosetae. Katatergal setae well-developed, mostly pale yellow with a few black ones. Anatergites weakly silver pubescent, asetose.

Legs: Femora and tibiae black and orange (proximally), coxae silver pubescent, other segments apubescent. Trochanters pale yellow setose, femora and tibiae black and yellow setose, tarsi black setose.

Wings (Fig. 5): Length (humeral crossvein to tip) x breadth (maximum): ♂ 8.4 × 2.8 – 10.8 × 4.2 mm (mean – 5 specimens – 9.6 × 3.4 mm), ♀ 8.9 × 3.2 – 11.2 ×

3.9 mm (mean – 5 specimens – 9.7 × 3.4 mm), males and females on average of similar size. Veins dark red-brown to black, membrane transparent, almost entire surface, except for small parts of basal cells, microtrichose.

Abdomen: Black, apubescent, black (tergites) and white (sternites and lateral margins of tergites) setose. T1 with clusters of yellow setae laterally.

Terminalia: ♂ terminalia as in Fig. 11 (previously published as fig. 3 by Londt (1977)). Hypopygium rotated through 180°.

Material examined. SOUTH AFRICA: 1♂ 'South Africa / Nieuwoudtv[ille] [*c.* 31°22'29"S, 19°06'39"E 720m] / Dec 1956 / J. Giliomee', NMSA-DIP-08870 (NMSA); 1♂ 'Cape Province / Cradock [*c.* 32°10'52"S, 25°39'04"E 970m] / 28.xi.1968 / J.G.H. Londt', NMSA-DIP-08847 (NMSA)*; 1♀ 'Capland / Willowmore [*c.* 33°17'16"S, 23°29'22"E 820m] / Jan 1908 / Dr. Brauns', NMSA-DIP-08862 (NMSA)*; 1♀ 'Rust en Vrede [*c.* 33°23'39"S, 22°21'27"E 925m] / Oudtshoorn Dist / C.P.' ~ 'Mus. Expd., / Oct. 1951', SAM-DIP-A007972 (SAMC); 1♀ 'Wit River Valley / Bains Kloof [*c.* 33°34'47"S, 19°08'06"E 355m] / C.P.' ~ 'Mus. Exp. / Dec. 1949', SAM Expedition, SAM-DIP-A007974 (SAMC); 1♀ 'Uniondale [*c.* 33°38'55"S, 23°08'18"E 750m] Capland / Dr. Brauns / 25.1.09', NMSA-DIP-08875 (NMSA)*; 1♂ 1♀ 'Pearly Beach [*c.* 34°39'29"S, 19°29'18"E 20m] / Bredasdorp' ~ 'S.A.M. / 9:59', SAM-DIP-A007975 (SAMC); 1♂ 'Wyk's Vlei [? Wellington area *c.* 33°39'46"S, 19°00'03"E 120m] / Cape Col.', SAM-DIP-A007973 (SAMC); 1♂ 'Goudini [*c.* 33°40'06"S, 19°15'51"E 245m] / 1/7/46 / P. Stofberg', NMSA-DIP-08860 (NMSA); 1*? [M] 'South Africa / Paarl [*c.* 33°44'03"S, 18°57'44"E 125m] / 29-9-1936 / Ac. UD', NMSA-DIP-08863 (NMSA); 4♂ 1♀ 'Sth Africa Cape Prov / Outeniqua State For. [*c.* 33°45'S, 23°01'E 520m] / near Knysna. 3323CC / 23.i.1984 D. & C. / Barraclough. Forest / and forest margins', NMSA-DIP-08866 [1♂] 08871 [1♂] NMSA-DIP-81789 91 92 (NMSA); 1♂ 'Tygerberg [*c.* 33°51'46"S, 18°35'14"E 310m] / 10km N. of Milverton / 22.xii.1983 / H. Geertsema', SANC-DIPT-02273' (SANC); 1♀ 'S.Afr.W.Cape / Grootvadersbosch / 33°52'30"S, 20°52'30"E [*c.* 600m] / 28–30 Dec. 1996 / D. Larsen / Dry Montane Forest', SAM-DIP-A014989 (SAMC); 1♂ 'Montagu Pass [*c.* 33°53'41"S, 22°25'13"E 470m] / George / Dr. Brauns / Cape Colony / 20.I.1922', NMSA-DIP-08850 (NMSA)*; 1♂ 'V[an]. Stadens / River [*c.* 33°53'59"S, 25°12'24"E 245m] / Dr. Brauns / Cape Colony / 1924', NMSA-DIP-08841 (NMSA)*; 1♂ 'Cape / Cape Town [*c.* 33°55'30"S, 18°25'27"E 95m]' ~ 'Pres / Purcel / 1888', NMSA-DIP-08851 (NMSA)*; 1♂ 'South Africa / Stellenbosch [*c.* 33°55'56"S, 18°51'37"E 145m] / 10.ii.1964 / P.L. Swart', NMSA-DIP-08861 (NMSA); 2♂ 'Sth Africa Cape Prov / Storm's River State / For. [*c.* 33°57'01"S, 23°50'11"E 425m] 3423BB 24.i.1984 / D. & C. Barraclough / Forest margins', NMSA-DIP-08864, NMSA-DIP-81797 (NMSA); 1? 'Ac. – C / 2639', 'S.H. Skaife / Rosebank [*c.* 33°57'18"S, 18°28'24"E 20m], Cape Prov. / 13.12.1916', 'National Coll. / of Insects / Pretoria. S. Afr.', 'SANC-DIPT-02271 (SANC); 3♂ 3♀ 'Sth Africa: Cape Prov / Knysna Forest 3423AA / Londt & Stuckenberg / 9.xii.1979 Diepwalle [*c.* 33°57'43"S, 23°09'10"E 420m] / Deep forest & margin', NMSA-DIP-08876 [1♀] NMSA-DIP-81799–803 (NMSA); 1♀ 'K.H.L. Key / Newlands [*c.* 33°58'44"S, 18°26'54"E 65m] / Cape Peninsula / Cape Province', SAM-DIP-A014988 (SAMC); 2♀

'S.Afr.W.Cape. Table Mt. / Disa Gorge [*c.* 33°58'47"S, 19°23'35"E 675m], upstream / From Hely-Hutchinson Res. / Feb. 1997. Preying on flies', SAM-DIP-A014986–7 (SAMC); 1♀ 'Claremont [*c.* 33°59'10"S, 18°28'20"E 30m] C.P. / #47. 31-xii-42 / D.E.Willis', SAM-DIP-A007978; 1♂ 'Cape Town / Kirstenbosch [*c.* 33°59'15"S, 18°25'58"E 130m] / Mar. 1943 / From / in wood of Silver / Tree [*Leucodendron argenteum*]', 'National Coll. / of Insects / Pretoria. S. Afr.', SANC-DIPT-02272 [Pinned with pupal exuvium] (SANC); 1♀ 'George [*c.* 33°59'17"S, 22°27'11"E 190m] / Capland / Dr. Brauns / 10.11.12', NMSA-DIP-08874 (NMSA)*; 2♂ 'Storms River Pass [*c.* 33°59'21"S, 23°54'40"E 120m] / Tsitsikama area / 8.12.67 3423BB / B & P Stuckenberg', NMSA-DIP-08853 [1♂] NMSA-DIP-81806 (NMSA)*; 1♂ 'Knysna / forest [*c.* 34°00'07"S, 23°02'44"E 245m] / Miss Rex / 1911', NMSA-DIP-08846 (NMSA)*; 1♀ 'Karreedouw Mountains [*c.* 34°01'15"S, 24°25'24"E 695m] / West of Humansdorp / East Cape Prov / 14 Oct 1959 / B & P Stuckenberg', NMSA-DIP-08844 (NMSA)*; 1♀ 'South Africa / Swellendam [*c.* 34°01'33"S, 20°26'17"E 125m] / 30.3.1936 / Ac. US', NMSA-DIP-08859 (NMSA); 1♂ 'South Africa, Cape Town / Constantiaberg, above Tokai Forest, above / Donkerboskloof. 460m / 34 02S 18 23 30E', '28 Nov – 6 Dec 1994 / S. van Noort. Mesic / Mtn. Fynbos. *Protea* / *coronate* dominated / Malaise trap', SAM-DIP-A014990 (SAMC); 1♀ 'Knysna [*c.* 34°02'07"S, 23°02'47"E 20m] / Capland / Dr. Brauns / 1.1.10', NMSA-DIP-08873 (NMSA)*; 1♀ 'South Africa / S.W. Cape / Somerset West [*c.* 34°04'33"S, 18°50'36"E 65m] / 3.10.93 / A. Securby [? indistinct] NMSA-DIP-08930 (NMSA)*; 1♂ 'Sth Africa: Cape Prov / Silvermine Nature Res. [*c.* 34°05'13"S, 18°25'04"E 320m] / 34°08'S, 18°26'E / 22.xii.1988 / JGH Londt Macchia / Sandy ground & rocks', NMSA-DIP-08869 (NMSA); 1♂ 'Muisenberg [*c.* 34°05'24"S, 18°29'45"E 10m] / 27 Dec 1934 / G van Son', 'Collection / Transvaal / Museum', NMSA-DIP-08858 (NMSA)*; 1♂ 'Oudebosch / R. Zonder End Mts. [*c.* 34°08'27"S, 19°55'12"E 165m]' ~ 'H.G. Wood / Jan. 1938', SAM-DIP-A007976 [same no. as previous record] (SAMC); 1♀ 'R. Sonder End [= Riviersonderend] / Oudebosch 1500ft' ~ 'K.H. Barnard / Nov. – Dec. 1928', SAM-DIP-A007976 (SAMC); 1♀ 'Cape Province / Mossel Bay [*c.* 34°10'29"S, 22°05'00"E 140m] / Dec. 1934', 'S. Africa: / RE Turner / B.M. 1935–73', NMSA-DIP-08865 (NMSA)*; 1♀ 'Steinbrass Riv. / Caledon [*c.* 34°13'53"S, 19°25'31"E 255m] C.C. / K.H. Barnard / 1916', SAM-DIP-A007977; 1♀ 'South Africa, Cape / 6km NE Hermanus [*c.* 34°24'33"S, 19°15'02"E 25m] / 29.xii.1983 D.J. Brothers', NMSA-DIP-08868 (NMSA); 1♀ 'EC Anderson [indistinct] / South Africa / Robertson / 25/10 1942', NMSA-DIP-08867 (NMSA); 1♂ No locality data, SAM-DIP-A014256 (SAMC); 1♂ 'Z', SAM-DIP-A014991 (SAMC); 1♂ 'USAfrica / McGough- / Skinner '49 / No 9' USNMENT01443701 (USNM).

Additional material not studied. Photographs of the holotype are available at the ZMUC web-site (http://daim.snm.ku.dk/digitized-type-collection-details-simple?catno=zmuc00025277): SOUTH AFRICA: 1♀ HOLOTYPE '*L. flavipes* Wied. / Cape of Good Hope / Oct: 1817', '♀', 'Mus. / Westerm.', 'TYPE', ZMUC-00025277' (ZMUC).

The senior author has seen photographs of the following specimens which are believed to represent *flavipes*: SOUTH AFRICA: 1♂ 'Ceres [*c.* 33°22'09"S, 19°18'48"E

455m] / Cape Province / 1500 ft. / Dec. 1920', 'S. Africa / R.E. Turner / Brit. Mus. / 1921-38', 'NHMUK012810853' (BMNH); 1♂ 'Ceres / Cape Province / Nov. 1920', 'S. Africa / R.E. Turner / Brit. Mus. / 1920-497', 'NHMUK012810855' (BMNH); 1♀ 'Ceres / Cape Province / Nov. 1920', 'S. Africa / R.E. Turner / Brit. Mus. / 1920-497', 'NHMUK012810858' (BMNH); 1♀ 'S. Africa (5) / Kloof Nek [*c.* 33°56'24"S, 18°23'47"E 215m] / Cape Town / 1–2.1.1972', 'Miss A. Mackie', '*Laphria* / *flavipes* Wied. / det. J.E. Chainey, 1984', 'NHMUK012810460' (BMNH); 1♂ 'Cape Province / Swellendam [*c.* 34°01'33"S, 20°26'17"E 125m] / 9–14.xii.1931', 'S. Africa / R.E. Turner / Brit. Mus. / 1932–3', 'NHMUK012810453' (BMNH); 1♀ 'Mossel Bay [*c.* 34°10'29"S, 22°05'00"E 120m] / Cape Province / 18–30.xi.1921', 'S. Africa / R.E. Turner / Brit. Mus. / 1922-2', 'NHMUK012810854' (BMNH); 1♀ 'Cape Peninsula [*c.* 34°15'00"S, 18°24'57"E 65m] / 13.v.1933 / R.E. Turner / B.M. 1938-6', 'NHMUK012810458' (BMNH); 1♂ 'South Africa / Cape Town - / Cape Point [*c.* 34°21'24"S, 18°29'49"E 10m] / 1–5.xi.1930 / N.W. Simmonds', 'Pres. by / Imp. Inst. Ent. / B.M. 1940-74', '*Laphria* ♂ / *flavipes* Wied. / det. H. Oldroyd, 1939', 'NHMUK012810454' (BMNH); 1♀ '40 / 6.26 / 701', 'NHMUK012810852' (BMNH).

Distribution, phenology and biology. A relatively well-collected South African endemic with a distribution centered in the Western Cape Province (Fig. 27) but extending into the Northern and Eastern Cape provinces. Data indicate that adults have a relatively long period of activity ranging from September through to March (there are single records for July and May), with a peak in December (Table 1). The species apparently inhabits a wide range of habitats from indigenous forest to more open areas of macchia where adults are usually found sunning themselves on vegetation. *C. flavipes* is endemic to three biodiversity hotspots *sensu* Conservation International. It occurs primarily within the Cape Floristic Region biodiversity hotspot, but is also distributed within the Maputaland-Pondoland-Albany and Succulent Karoo biodiversity hotspots. Little is known of their biology, but one specimen, collected at Kirstenbosch National Botanical Garden, Cape Town (SANC-DIPT-02272) is pinned together with its pupal exuvium and labelled as having been collected from an indigenous Silver Tree (Proteaceae: *Leucodendron argenteum*) where the larva had presumably been feeding.

***Choerades multipunctata* (Oldroyd, 1974)**

http://zoobank.org/216E1006-C478-47F7-8196-944507E4B71E
Figs 6, 21–24, 28

Laphria multipunctata Oldroyd, 1974: 102.
Choerades multipunctata: Londt 1977: 47.

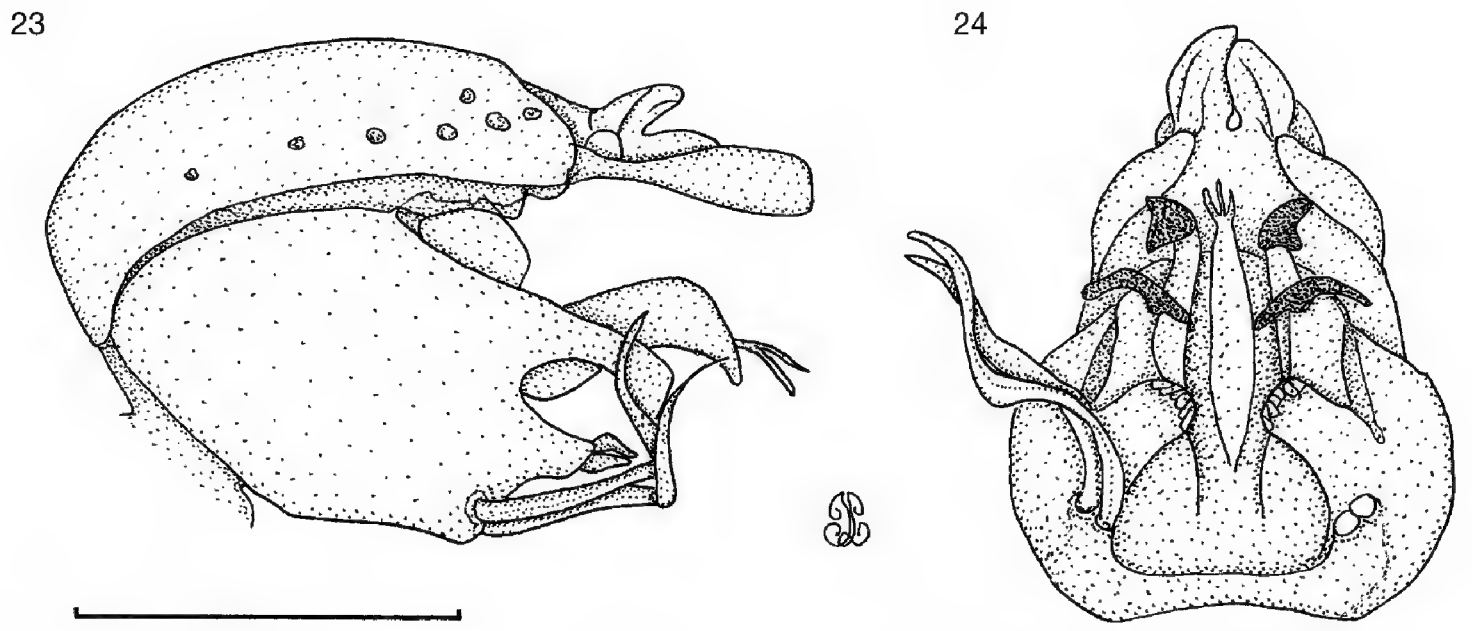
Redescription. Based on material examined and photos of BMNH specimens. The entire lectotype male specimen is shown in Figs 21–22.

Head: Black, weakly silver pubescent, black and white (few) setose. Antenna black, scape and pedicel black setose. Face black, weakly silver pubescent laterally, depressed

Figures 21, 22. *Choerades multipunctata* entire Lectotype ♂ (NHMUK012804995). **21** Dorsal **22** Lateral. Images provided by Erica McAlister (BMNH).

centrally. Mystax black (a few fine white setae may be present along epistomal margin), macrosetae confined to elevated parts of facial protuberance. Lateral parts of face with small groups of glistening silvery scale-like setae. Frons and vertex shiny apubescent, largely asetose except for black setae adjacent to eye margins. Ocellar tubercle prominent, weakly setose except for a pair of strong black ocellar macrosetae. Occiput largely apubescent except for narrow strips along eye margins, black setose (few small white setae ventrally). Palps black and white setose.

Thorax: Dark red-brown to black, punctate, weakly silver pubescent, black setose. Cervical sclerite black setose. Mesonotum punctate, almost entirely apubescent (small silver pubescent spots adjacent to postpronotal lobes), black setose. Lateral macrosetae black (1 notopleural, 2 supra-alars, 1–2 weak postalars). Scutellum black, punctate, apubescent, fine black setose, *c.* 2 small black apical scutellar macrosetae. Pleura mostly apubescent (weak silver pruinescence may be evident in places), black setose. 1 black anepisternal macroseta. Katatergal setae well-developed, black. Anatergites weakly silver pubescent, asetose.



Figures 23, 24. *Choerades multipunctata* ♂ terminalia (SAM-DIP-A007986). **23** Lateral **24** Ventral. Scale bar: 1 mm.

Legs: Almost entirely black except for proximal three quarters of tibiae which are yellow, black setose except for yellow setae associated with yellow parts of tibiae, all segments apubescent.

Wings (Fig. 6): Length (humeral crossvein to tip) x breadth (maximum): ♂ 6.3 × 2.5 – 7.8 × 3.4 mm (mean - 5 specimens) 7.2 × 2.9 mm, ♀ 5.4 × 2.3 – 8.1 × 3.2 mm (mean – 4 specimens) 7.1 × 2.9 mm. Veins brown to dark red-brown, membrane transparent, almost entirely brown microtrichose, only proximal parts of basal cells somewhat devoid of microtrichia.

Abdomen: Dark red-brown to black, punctate, apubescent, black setose. T1 with 2–4 black discal macrosetae.

Terminalia: ♂ terminalia as in Figs 23, 24. Rotated through 180°. Epandrium weakly bilobed distally bearing *c.* 7 long, well-developed, laterally situated macrosetae on both sides. Proctiger extending far beyond epandrium, with elongate ventral lamellae. Gonocoxites well-developed, distally bifurcate, ventral lobe bearing short, closely associated and probably fused macrosetae (typical of the genus) distally. Dorsal lobes dorsoventrally flattened and downturned distally. Gonocoxites with a pair of exceptionally long, closely associated, twisted macrosetae (each appearing oval in cross-section). Gonostyli project well beyond dorsal lobes of gonocoxites and also possess dorsoventrally flattened and downturned distal ends. Hypandrium apparently entirely wanting. Aedeagus elongate with trifurcate tip.

Material examined. SOUTH AFRICA: 1♀ 'Paleisheuwel [Road *c.* 32°31'08"S, 18°51'42"E 460m] / C.P.' - 'Mus. Exp. / Nov. 1948', SAM-DIP-A007985 (SAMC); 1♀ **Paralectotype** '7 [Seven] Weeks Poort [*c.* 33°22'05"S, 21°24'47"E 1015m] / C.P., 17-xi-1940 / G van Son', 'Collection / Transvaal / Museum', '*Laphria* / *multipunctata* Oldr / det. H. Oldroyd 1972', NMSA-DIP-08856 (NMSA)*; 1♂ 'Cloete's Pass [*c.* 33°57'33"S, 21°47'50"E 310m] / Oct. 1937', SAM-DIP-A007986 (SAMC).

Material not examined. Photos supplied by the BMNH confirm the identifications of the following specimens and provide the following detailed information. As Oldroyd

(1974) failed to designate a holotype, all the material handled by him should be considered syntypes (and all but one were labelled as such by Chainey in 1984). For taxonomic stability we hereby designate a BMNH male collected at Matjiesfontein between 6–15.x.1928 as Lectotype (NHMUK012804995). Oldroyd's other specimens are considered Paralectotypes as indicated below (and above), except for the male from Worcester as this locality was not listed by Oldroyd (1974). SOUTH AFRICA: 1♂ **Lectotype** 'S. Africa / R.E. Turner / Brit. Mus. / 1928 - 480', 'Cape Province / Matjesfontein. [Matjiesfontein *c.* 33°13'51"S, 20°34'58"E 900m] / 6–15.x.1928', '*Laphria* / *multipunctata* sp. n. / det. H. Oldroyd, 1958', 'Syntype / *Laphria* / *multipunctata* Oldroyd / det J.E. Chainey, 1984' 'NHMUK012804995' (BMNH); 2♂ **Paralectotypes** 'S. Africa / R.E. Turner / Brit. Mus. / 1928 - 491', 'Cape Province / Matjesfontein. / 22–23.x.1928', '*Laphria* / *multipunctata* sp.n. / det. H. Oldroyd, 1958', 'Syntype / *Laphria* / *multipunctata* Oldroyd / det J.E. Chainey, 1984' 'NHMUK012804991 & 7'(BMNH); 2♂ 1♀ **Paralectotypes** 'S. Africa / R.E. Turner / Brit. Mus. / 1928 - 499', 'Cape Province / Matjesfontein. / 25–30.x.1928', '*Laphria* / *multipunctata* sp.n. / det. H. Oldroyd, 1958', 'Syntype / *Laphria* / *multipunctata* Oldroyd / det. J.E, Chainey, 1984' 'NHMUK012804992 [♂], NHMUK012804993 [♀] & NHMUK012804996 [♂]' (BMNH); 1♂ 'S. Africa / R.E. Turner. / Brit. Mus. / 1928-491', 'Cape Province: / Worcester [*c.* 33°39'14"S, 19°27'42"E 245m]. / 2–4.x.1928' 'NHMUK012804994' (BMNH); no type status.

Note: Although Oldroyd clearly recognised this distinctive species as early as 1958, it remained undescribed until 1974.

Distribution, phenology and biology. A relatively poorly-collected South African endemic known from only five localities in the Western Cape Province (Fig. 28). Material has been collected in October and November. Nothing is known of the preferred habitat, but the localities suggest vegetated valleys in areas dominated by Cape macchia vegetation. *C. multipunctata* is endemic to two biodiversity hotspots *sensu* Conservation International. It occurs primarily within the Cape Floristic Region biodiversity hotspot, but is also distributed within the Succulent Karoo biodiversity hotspot. Nothing is known of the biology.

***Choerades nigrapex* (Bigot, 1878), comb. n., stat. rev.**
http://zoobank.org/B88A4293-2483-4492-82A5-A6DA9AE6A4A0
Figs 7, 9, 25, 28

Dasythrix ? nigrapex Bigot, 1878: 229–230.
Laphria aureopilosa Ricardo, 1900:171; 1925: 279; Oldroyd 1970: 227 (key); 1974: 102 (key). **Syn. n.**
Choerades aureopilosa: Londt 1977: 44 (fig. 1 ♂ terminalia).
Laphria variabilis Bromley, 1947: 112. **Syn. n.**

Notes. With the discovery that Bigot's (1878) *Dasythrix nigrapex*, subsequently synonymized with *C. flavipes* (Wiedemann, 1821) by Oldroyd (1974: 102), is actually a

Figure 25. *Choerades nigrapex* entire Holotype ♂ lateral. Image provided by Zoë Simmons (OXUM).

valid species identical to *aureopilosa*, it becomes necessary to stabilize the taxonomy by formally recognizing *nigrapex* as belonging to *Choerades* and synonymizing *aureopilosa* and *variabilis* with it. This action is regrettable as *aureopilosa* has been one of the more commonly referred to species in the Southern African fauna. Although the authors have only seen good photographs of the unique holotype (Fig. 25), housed in the Oxford University's collection (OXUM), Zoë Simmons has been able to confirm that it conforms well with the following redescription based on material available to the authors.

Redescription. Based on all material studied.

Head: Black, silver and gold pubescent, black and white setose. Antenna black, scape and pedicel black setose. Face black, gold pubescent. Mystax predominantly black (a few pale yellow setae may be present ventrally) with macrosetae confined to elevated parts of facial protuberance. Lateral parts of face with groups of glistening silvery scale-like setae. Frons and vertex fine gold pubescent, largely asetose except for black setae adjacent to eye margins. Ocellar tubercle prominent, weakly setose except for a pair of strong black ocellar macrosetae. Occiput silver pubescent, strongly setose (black dorsally, white ventrally). Palps black and white setose.

Thorax: Black, silver pubescent, black, white and pale yellow setose. Cervical sclerite entirely black setose. Mesonotum apubescent, predominantly pale yellow (some ♂) or black (♀ and some ♂) setose. Lateral macrosetae predominantly black (a few yellow

may occur) (1–2 notopleurals, 3 supra-alars, 3 postalars). Scutellum black, apubescent, fine pale yellow (♂) or black (♀) setose, *c.* 8–10 apical scutellar macrosetae, pale yellow (♂) or black (♀). Pleura silver pubescent, fine black and white setose. 1–2 black anepisternal macrosetae. Katatergal setae well-developed, mostly black (dorsally) and pale yellow (ventrally). Anatergites weakly silver pubescent, weakly yellow setose laterally.

Legs: Predominantly black with proximal parts of femora and tibiae orange (to varying degrees). Coxae silver pubescent, white setose. Trochanters weakly white setose. Femora and tibiae black and pale yellow setose, tarsi black setose.

Wings (Fig. 7): Length (humeral crossvein to tip) x breadth (maximum): ♂ 7.3 × 3.0 – 8.9 × 3.5 mm (mean – 5 specimens - 8.1 × 3.2 mm), ♀ 7.2 × 2.8 – 10.1 × 3.6 mm (mean – 5 specimens – 8.8 × 3.2 mm), females on average slightly bigger than males. Veins dark red-brown to black, membrane transparent, distal two-thirds orange-brown microtrichose, basal cells almost devoid of microtrichia except distally.

Abdomen: Black, moderately long, pale yellow (♂) or short black (♀) setose. T1 with a group of pale yellow (♂) or white (♀) white discal macrosetae.

Terminalia: ♂ terminalia as in Fig. 9 (previously published as fig. 1 by Londt (1977)). Sternite 10 uniquely equipped with a well-developed distal lobe. Hypopygium rotated through 180°. *Note*: In contrast to other Southern African species *nigrapex* not only possesses a lobed S10, but lacks long isolated gonocoxal setae proximally. In addition the gonocoxites appear completely fused midventrally.

Material examined. SOUTH AFRICA: 2♀ 'South Africa: Natal / Kosi Bay - Estuary [*c.* 26°53'32"S, 32°52'41"E 15m] / 2632DD 16–19.iii.1982 / Coll: D.A. Barraclough / Indigenous Bush area', NMSA-DIP-08854 & NMSA-DIP-81687 (NMSA); 1♀ 'South Africa: Natal / Kosi Bay Nat. Reserve [*c.* 26°55'55"S, 32°50'50"E 15m] / 2632DD 30.xi – 2.xii.82 / Londt, Barraclough & / Stuckenberg Forest / & open woodland areas', NMSA-DIP-08855 (NMSA); 1♂ 2♀ 'S Africa: KwaZulu-Natal / Kosi Bay Nature Res. / 26°57'21"S, 32°49'51"E / 10–15.xii.2010 37m / JGH Londt Dune Forest', NMSA-DIP-81690–2 (NMSA); 1♂ 'S Africa: KwaZulu-Natal / Kosi Bay Nature Res. / 26°57'21"S, 32°49'51"E / 20.ii.2011 JGH Londt / 35m Mixed Dune Forest' NMSA-DIP-81693 (NMSA); 4♂ 'S Africa: KwaZulu-Natal / Kosi Bay Nature Res. / 26°57'46"S, 32°48'35"E / 9–13.x.2011 JGH Londt / 20m Picnic area Sandy / mixed savanna', NMSA-DIP-81694–7 (NMSA); 1♂ 'South Africa: Natal / Makaheli For. [*c.* 26°57'49"S, 32°45'04"E 60m] 2632DD / ca. 5km NE Manguzi / 30.xi–2.xii.1982 / Barraclough, Londt & / Stuckenberg Forest', NMSA-DIP-08827 (NMSA); 1♀ 'S Africa: KwaZulu-Natal / Kosi Bay Nature Res. / 26°57'50"S, 32°48'41"E / 19 & 20.ii.2011 J Londt / 25m Mixed Dune Forest, / Woodland & Savanna', NMSA-DIP-81699 (NMSA); 3♂ 3♀ 'S Africa: KwaZulu-Natal / Kosi Bay Nature Res. / 26°57'52"S, 32°48'51"E / 15–16.xii.2010 6m / JGH Londt Lake Shore / Dune Forest & Woodland', NMSA-DIP-81700–5 (NMSA); 1♀ 'South Africa Ntl / Kosi Bay 26.58S / 32.48E 10–11.ii. / 1990 CD Eardley', SANC-DIPT-02343 (SANC); 2♀ 'S Africa: KwaZulu-Natal / Manguzi Forest Reserve / 26°59'32"S, 32°43'25"E / 13–16.xii.2010 61m / JGH Londt Sand Forest', NMSA-DIP-81706–7 (NMSA); 1♂ 'South Africa, Kwa- / Zulu. Lake Sibaya / E. Shore, 27.22S / 32.43E. 18–20.i. / 1981. R. Oberprieler', 'National Coll. / of Insects / Pretoria. S. Afr.', SANC-DIPT-02274 (SANC); 1♀ [now

without terminalia], 'Manguzi [c. 27°00'00"S, 32°45'28"E 30m] River / Nr. Maputa, Zululand / Nov.–Dec. 1945 / H.W. Bell Marley', DMSA-DIP1005 (DMSA)*; 1♀ 'Mkuzi FT/AX 11/12/2004 /27.74696S, 32.29093E [*c.* 27°44'49"S, 32°17'27"E 50m] / *Acacia xanthophloea* / Pan-trap 6 Yellow / Earth Watch Team 8 / f287', NMSA-DIP-81708 (NMSA); 1♂ 1♀ 'S Africa: KwaZulu-Natal / Greater St. Lucia Wetland / Park Cape Vidal Camp / 28°07'25.6"S, 32°33'23.7"E / J.G.H. Londt 13.iii.2004 / 29m Dune forest edge', NMSA-DIP-15031 [♂] NMSA-DIP-81709 [♀] (NMSA); 1♂ 'S. Africa: Natal / St. Lucia Estuary / [*c.* 28°22'00"S, 032°25'00"E] 9–10 Feb / 1974 A.B. Gurney' USNMENT01384114 (USNM); 1♀ 'S Africa: Natal #3 / Nseleni Nature Res. / 28°41'S, 32°03'E 100m / Date: 10.i.1994 / Natal Museum Expedition / Forest and margins', NMSA-DIP-08842 (NMSA); 1♀ 'South Africa: Natal / Richards Bay area / 3205E 2850S [*c.* 28°46'51"S, 32°02'18"E 360m] 21.ii.82 / PE Reavell 250m', 'Edge of / swamp / forest / tree', NMSA-DIP-81712 (NMSA); 1♂ 'Ngoye forest [Reserve *c.* 28°50'34"S, 31°42'09"E 395m] between / Eshowe & Empangeni / Zululand. S. Africa / Stuckenberg / February 1957', '*Laphria* / *nigribimba* Brom. / det. H. Oldroyd, 1963', NMSA-DIP-08800 (NMSA)*; 2♂ 'South Africa: Natal / Ngoye Forest Reserve ca. 28°51'S, 31°44'E [*c.* 395m] / Coast Scarp For. 250m / J. Londt 29.i.1988', NMSA-DIP-08843 NMSA-DIP-81714 (NMSA); 1♂ 'South Africa: Natal / Entumeni Nature Res. / 28°52'35"S, 31°22'54"E [*c.*710m] / J. Londt 26.i.1988 / Coast Scarp For. 720m', NMSA-DIP-08836 (NMSA); 1♀ '1174', 'Eshowe [*c.* 28°53'41"S, 31°27'38"E 515m] / 11–16 / Marley', '*Laphria* / *flavipes* / ♀ Wied', 'Ricardo / determ.', 'Not *flavipes* / *Laphria* sp. ign. / ♀ AJH', '*Laphria aureopilosa*', 'SAM-DIP-A007967' (SAMC); 1♂ 'So. Africa: Natal, 1,5km / E. Mtunzini 2831Dd / Umlalazi Nature Res. [*c.* 28°57'19"S, 31°46'02"E 5m] / Feb. 1979 R.M. Miller / indig. For., Malaise tr.', NMSA-DIP-08828 (NMSA); 1♀ 'So. Africa: Natal, 1,5km / E. Mtunzini 2831Dd / Umlalazi Nature Res. / Nov. 1978 R.M. Miller / indig. For., Malaise tr.', NMSA-DIP-08826 (NMSA); 1♀ 'South Africa: Natal / Umlalazi Nature Res. / 26–27.i.1987 / JGH Londt SE2831DD / Dune forest & margin', NMSA-DIP-08838 (NMSA); 5♂ 'South Africa KZN / Amatigulu Nature Res / 29°07'03"S, 31°35'39"E / J&A Londt 3 xi 2016 / 40m Coastal forest' NMSA-DIP-81720–4 (NMSA); 1♀ 'Tugela River / mouth [*c.* 29°13'12"S, 31°30'18"E 20m]/ Natal / 29.3.1963 / T.W. Schofield', '*Laphria* / *flavipes* Wied. / det. H. Oldroyd, 1963', NMSA-DIP-08825 (NMSA)*; 1♂ 'South Africa: Natal / Pietermaritzburg / Townbush Valley [*c.* 29°33'39"S, 30°19'34"E 910m] / RM Miller + malaise / December 1976', NMSA-DIP-08840 (NMSA)*; 1♀ 'South Africa: KZN / Doreen Clark Nat. Res. / 29°34'43"S, 30°17'21"E / JGH Londt 12.i.2018 / 1125m Mistbelt forest' NMSA-DIP-81727 (NMSA); 2♀ 'H.C. Burnup / Tongaat [*c.* 29°35'17"S, 31°05'07"E 100m], '08–9', NMSA-DIP-08824 & NMSA-DIP-81728 (NMSA); 1♀ 'Hawaan Forest [*c.* 29°42'32"S, 31°05'28"E 70m] / Nr Umhlanga 10/12/98 / 29°05'24"S, 31°05'24"E, 'Coll. AP Leftwich' NMSA-DIP-08857 (NMSA); 1♂ '687', 'KKloof [*c.* 29°46'21"S, 30°49'49"E 435m] / Marley / 12.15', 'Ex descry / *Laphria* / *nigrapex* / ♂ (Big.) / AJH', SAM-DIP-A007968 (SAMC); 1♂, 'Durban [*c.* 29°51'S, 31°01'E 5m], Natal / 16.III.1975 / R.K. Brooke', DMSA-DIP1003 (DMSA)*; 1♀, 'Durban, Natal / 13.4.1974 / R.K. Brooke', DMSA-DIP1004 (DMSA)*; 1♂ '235', 'Marley / Stella B[ush] [? Pigeon Valley Nature Reserve *c.* 29°51'53"S, 30°59'13"E

95m] / 2–1915', NMSA-DIP-08809 (NMSA)*; 1♂, 'Durban, / Natal / 6–10–21 / C.N. Barker / Stella / 3731', '*Laphria* / *variabilis* / n. sp. / Det / S.W. Bromley 1947', 'Holotype / *Laphria* / *variabilis* / S.W. Bromley [red]', DMSA-DIP1008 (DMSA)*; 1♂ 'Marley / 2–1915 / Stella B', SAM-DIP-A007961 (SAMC); 1♂ 'Bluff [*c.* 29°55'19"S, 31°00'18"E 30m] / 8-8-25 / HWB-M', 'SW Bromley / Collection / 1955' '3267', NMSA-DIP-08817 (NMSA)*; 1♂ 'Durban / Natal / 12.3.20 / C.N. Barker / Bluff / 2533', 'Paratype / *Laphria* / *variabilis* / Bromley [red]', DMSA-DIP1216 (DMSA)*; 1♀ 'Durban / Natal / 4.12.20 / C.N. Barker / Bluff / 2588', 'Paratype / *Laphria* / *variabilis* / Bromley [red]', DMSA-DIP6929 (DMSA)*; 1♂ 'Durban / Natal / 7.12.21 / C.N. Barker / Bluff / 2758', 'Paratype / *Laphria* / *variabilis* / Bromley [red]', DMSA-DIP6930 (DMSA)*; 1♀ 'Durban / Natal / 25.3.21 / C.N. Barker / Bluff / 2644', DMSA-DIP1007 (DMSA)*; 1♀ 'Durban / Natal / 1-2-19 C.N. Barker / Bluff / 2368', SAM-DIP-A007962 (SAMC); 1♂ 'Bluff / 18-1-17 / C.N. Barker / A. No: 2001', SAM-DIP-A007964 (SAMC); 1? [♂ lacking terminalia], 'Winklespruit [c. 30°06'17"S, 30°51'10"E 20m] / 25.12.18 / C.N. Barker / Ac. No. 2328', DMSA-DIP1006 (DMSA)*; 1? [♀ lacking terminalia], 'Winklespruit / 21.12.18 / C.N. Barker / Ac. No. 2328', DMSA-DIP1002 (DMSA)*; 1♀, 'Park Rynie [c. 30°19'04"S, 30°44'22"E 25m] / Natal / 23.12.20 / C.N. Barker / 2595', 'Allotype / *Laphria* / *variabilis* / S.W. Bromley [red]', DMSA-DIP6928 (DMSA)*; 2♀ 'Sth Africa: KZ-Natal / Southbroom Frederika / Trail J&A Londt 5m / 30°55'23"S, 30°19'10"E / 19.i.2014 Dune forest' NMSA-DIP-81733–4 (NMSA); 1♂ 1♀ 'South Africa KZ-Natal / Mpenjati Nature Reserve / Yengele Trail & Beach 5m / 30°58'09"S, 30°17'03"E [c. 20m] / J&A Londt 21.iii.2010 / Dune Forest & Margins' NMSA-DIP-81735–6 (NMSA); 1♂ 2♀ 'Sth Africa: Cape Prov / Goukamma Nature Res. [*c.* 34°02'27"S, 22°51'51"E 140m] / 34°02'S, 22°57'E / 25.xii.1988 / JGH Londt Macchia / Sandy ground & shrubs', NMSA-DIP-08830 [1♀] NMSA-DIP-81737–8 (NMSA); 1♂ 'Sth Africa: Cape Prov / Plettenberg Bay area / Robberg [*c.* 34°06'14"S, 23°23'44"E 110m] 8.xii.1988 / 34°03'S, 23°22'E / JGH Londt On tall / shrubs in Nat Reserve', NMSA-DIP-08835 (NMSA). ZIMBABWE: 1♀ 'N. Vumba [Mountains *c.* 19°04'37"S, 32°45'36"E 1290m], / S. Rhodesia / 15.10.1965 / D. Cookson', '*Laphria* / *flavipes* Loew / det. H. Oldroyd, 1972 / small specimen', NMSA-DIP-08818 (NMSA)*; 1♂ 'N. Vumba, / S. Rhodesia / 30.10.1965 / D. Cookson', NMSA-DIP-08839 (NMSA)*; 1♂ 'N. Vumba, / S. Rhodesia / 8.10.1964 / D. Cookson', NMSA-DIP-08831 (NMSA)*; 1♂ 'N. Vumba, / S. Rhodesia / 4.10.1964 / D. Cookson', '*Laphria* / *bella* Loew / det. H. Oldroyd, 1972', NMSA-DIP-08808 (NMSA)*; 1♀ 'N. Vumba, / S. Rhodesia / 21.3.1966 / D. Cookson', NMSA-DIP-08802 (NMSA)*; 1♂ 'N. Vumba, / S. Rhodesia / 13.3.1965 / D. Cookson', NMSA-DIP-08832 (NMSA)*; 1♀ 'N. Vumba, / S. Rhodesia / 4.iv.64 / D. Cookson', NMSA-DIP-08833 (NMSA)*; 1♀ 'N. Vumba, / S. Rhodesia / 7.10.1964 / D. Cookson', NMSA-DIP-08834 (NMSA)*; 1♀ 'Vumba / Umtali Dist. / Feb. 1932 / P.A.S.', 'Collection / Transvaal / Museum', '*Laphria* / *flavipes* Wied. / det. H. Oldroyd, 1972', NMSA-DIP-08837 (NMSA)*; 1♀ 'Mt Selinda [*c.* 20°25'02"S, 32°41'38"E 1170m] / S. Rhodesia [Zimbabwe] / Nov. – Dec. 1930 / R.H.R. Stephenson', SAM-DIP-A007966 (SAMC); 1♀ 'Mt. Selinda / 3.2.54 / N.J. Myers', '*Laphria* / *flavipes* Wied. / det. H. Oldroyd, 1963', NMSA-DIP-08829 (NMSA)*.

Additional material not personally studied. Holotype ♂. SOUTH AFRICA: Labels attached to specimen - 'Holo- / type [circular with red edge]', '*Dasythrix* / *nigrapex*. / 222 in / Coll. / Bigot', 'Coll. Bigot. / abt. 1845-93. / Pres 1913 by / J.E. Collin', 'ex. Hope-Westwood / Ox. Uni. Mus. of / Nat. Host. (OXUM)'. The specimen is housed in a drawer accompanied by the following label '222 *D* ? *nigrapex* ♂ / g. *Maira* ? (Schin.) / Natal. Port. J. Bigot'. Port Natal is an early name for the coastal city of Durban [*c.* 29°51'S, 31°01'E 5m].

In addition the senior author has seen photographs of the following specimens, identified as *aureopilosa*, which should now be allocated to *nigrapex*. SOUTH AFRICA: 1♂ 'Type [circular, red edge]', 'Durban [*c.* 29°51'S, 31°01'E 5m] / [*illegible*]', '*Laphria* / *aureopilosa* / n.sp. Type ♂ / GR31.5.00', 'S. Africa / Distant Coll. / 1911-383', 'Holotype [circular, stuck to label] / Holotype / *Laphria* / *aureopilosa* Ricardo / det. J.E, Chainey, 1984', 'NHMUK012810868' (BMNH); 1♂ 'Bluff / Durban / 25-ii. 16 / C.N. Barker', 'Presented / from / Durban Coll. / Per / GR / 26.7.91 [*poor writing*]', '*Laphria* / *variabilis* Bromley / Det. H. Oldroyd. 1958 / topotypical', 1 spec. 'Port St. John [31°38'S, 029°32'E] / Pondoland / Dec. 1923', 'S. Africa / R.E. Turner / Brit. Mus. / 1924-54', 'NHMUK012810869' (BMNH); 1♂ 'Durban, Natal, 24.02.19, C.N. Barker / Bluff [sideways] / 2499 [sideways]', 'Presented / from / Durban / Museum / Per CNB [?] / 10.1.23', 'NHMUK012810870' (BMNH).

Distribution, phenology and biology. A relatively well-collected species with a fairly extensive distribution ranging from the eastern highlands of Zimbabwe through much of coastal South Africa, including KwaZulu-Natal, Eastern Cape and the southern coastal region of the Western Cape (Fig. 28). Data indicate that adults have a relatively long period of activity ranging from September through to April, with a peak in December (Table 1). The species inhabits coastal and mist-belt forests with adults frequently found sunning themselves on vegetation. *C. nigrapex* occurs in three biodiversity hotspots *sensu* Conservation International. It occurs primarily within the Maputaland-Pondoland-Albany biodiversity hotspot and is also distributed within the Cape Floristic Region and Eastern Afromontane biodiversity hotspot, but also occurs outside of the latter hotspot. Little is known of their biology.

Choerades nigrescens **(Ricardo, 1925)**

http://zoobank.org/EC2C7438-689A-4D34-823E-D7A45A76F853
Figs 8, 12, 26, 27

Laphria nigrescens Ricardo, 1925: 279; Bromley 1935: 405 (key); Oldroyd 1970: 227 (key).
Choerades nigrescens: Londt 1977: 47 (fig. 4 ♂ terminalia).

Notes. Ricardo (1925: 279–280) described the species on 'Type (male) and four other males. Type (female) and four other females. All from Mt. Mlanje, Nyasaland (S.A. Neave).' In doing so she did not designate a holotype so all her listed specimens must be considered syntypes. We hereby designate one of the males as Lectotype, and the other specimens Paralectotypes.

Figure 26. *Choerades nigrescens* entire ♂ (NMSA-DIP-08884).

Redescription. Based on NMSA material. An entire male specimen is shown in Fig. 26.

Head: Black, silver pubescent, black and white setose. Antenna black, scape and pedicel black setose. Face black, dull silver pubescent, depressed centrally. Mystax mainly black, but white dorsally and ventrally, with macrosetae confined to elevated parts of facial protuberance. Lateral parts of face with groups of glistening silvery scale-like setae. Frons and vertex dull silver pubescent, weakly setose except for moderately developed black setae adjacent to eye margins. Ocellar tubercle prominent, weakly setose except for a pair of strong black ocellar macrosetae. Occiput weakly silver pubescent, black (dorsally) and white (ventrally) setose. Palps black and white setose.

Thorax: Black, silver pubescent, black and white setose. Cervical sclerite black and white (♀) or entirely white (♂) setose. Mesonotum apubescent except for weakly silver pubescent laterally margins and postpronotal lobes, predominantly black setose. Lateral macrosetae black (1 notopleurals, 2 supra-alars, 3 postalars). Scutellum black, shiny apubescent, fine

white setose, *c.* 8 slender apical scutellar macrosetae (mostly white but some may be black). Pleura silver pubescent, mostly fine white setose (a few stouter black macrosetae present). 1 black anepisternal macroseta. Katatergal setae well-developed, mostly white (ventrally) but a few black (dorsally). Anatergites weakly silver pubescent, weakly setose laterally.

Legs: Almost entirely black except for proximal half of metathoracic tibiae which are dull orange, coxae silver pubescent, other segments apubescent. Trochanters white setose, femora and tibiae mostly white setose, but with some black setae.

Wings (Fig. 8): Length (humeral crossvein to tip) x breadth (maximum): ♂ (1) 7.7 × 2.7 mm, ♀ (6) 6.6 × 2.3mm – 9.2 × 3.2 mm (mean 8.2 × 3.0mm). Veins dark red-brown to black, membrane transparent, distal two-thirds microtrichose, basal cells almost devoid of microtrichia except distally.

Abdomen: Black, sternites and lateral margins of tergites weakly silver pubescent, mostly white setose (tergites medially with minute black setae). T1 laterally with fine white discal setae and 2–4 black macrosetae (♀).

Terminalia: ♂ terminalia as in Fig. 12 (previously published as fig. 4 by Londt (1977)). Hypopygium rotated through 180°. Gonocoxites abut ventrally, hypandrium apparently absent.

Material examined. MOZAMBIQUE: 1♀ 'Marromeu [*c.* 18°16'06"S, 35°53'18"E 10m] Lower / Zambezi River / Port East Africa', 'Salone Forest / Dec. 1959 / Stuckenberg', NMSA-DIP-08882 (NMSA)*; 1♀ 'xi 1935 / H W Bell Marley', 'Muputa M [Maputo Mozambique *c.* 25°58'09"S, 32°34'24"E 35m]', SAMC-DIP- A007963 (SAMC); SOUTH AFRICA: 1♂ 'South Africa: Natal / Ndumu Game Reserve / Rest Camp [*c.* 26°54'35"S, 32°18'47"E 95m] 2632Cd 95m / 23–9:xi.1977 Malaise / Brothers & J. Guillarmod', NMSA-DIP-08880 (NMSA); 2♀, 'Manguzi [c. 27°00'00"S, 32°45'28"E 30m] River / Nr. Maputa, Zululand / Nov.–Dec. 1945 / H.W. Bell Marley', DMSA-DIP1009-10 (DMSA)*; 3♀ 'South Africa, Natal Prov / 10mi. N. Josini [*c.* 27°16'28"S, 32°04'47"E 165m] (2732Ac) / Nov. 28. 1971; ME & BJ Irwin / dry forest; 800ft. el.', NMSA-DIP-08872 [1♀] NMSA-DIP-81822–23 (NMSA)*; 1♀ 'Umziki Pan [*c.* 28°02'00"S, 32°19'00"E 80m] / W Shores St. Lucia / Mosaic coastal / bush. 31.1.93', NMSA-DIP-08881 (NMSA); 1♀ 'Trollips [?] / on window frame / 5pm. 26.12.78', NMSA-DIP-08884 (NMSA).

Note: We have also seen the following specimen from Zambia which suggests that the species is fairly widely distributed in East Africa and possibly Central Africa and has its southern limits in northern KwaZulu-Natal.

Extralimital material examined. The following specimen, identified as *nigrescens*, extends the distribution into Central Africa: ZAMBIA: 1♂ 'Malaise traps / Central Zambezian / Miombo Woodlands', 'Zambia: Mumbwa Dist. / Kafue National Park / Muyukuyuku camp area at: / 14°54.898'S, 26°03.820'E / 3–5.xii.2012. 1081m / A.H. & M.K. Kirk-Spriggs', BMSA(D)48832.

Material not examined. The senior author has seen photographs of the following specimens which are included such that distributional information is more complete.

Lectotype: MALAWI: 1♂ 'Type / H.T.' [circular, red border], 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-58', 'Nyasaland / Mt. Mlanje [*c.* 15°56'55"S, 35°35'26"E

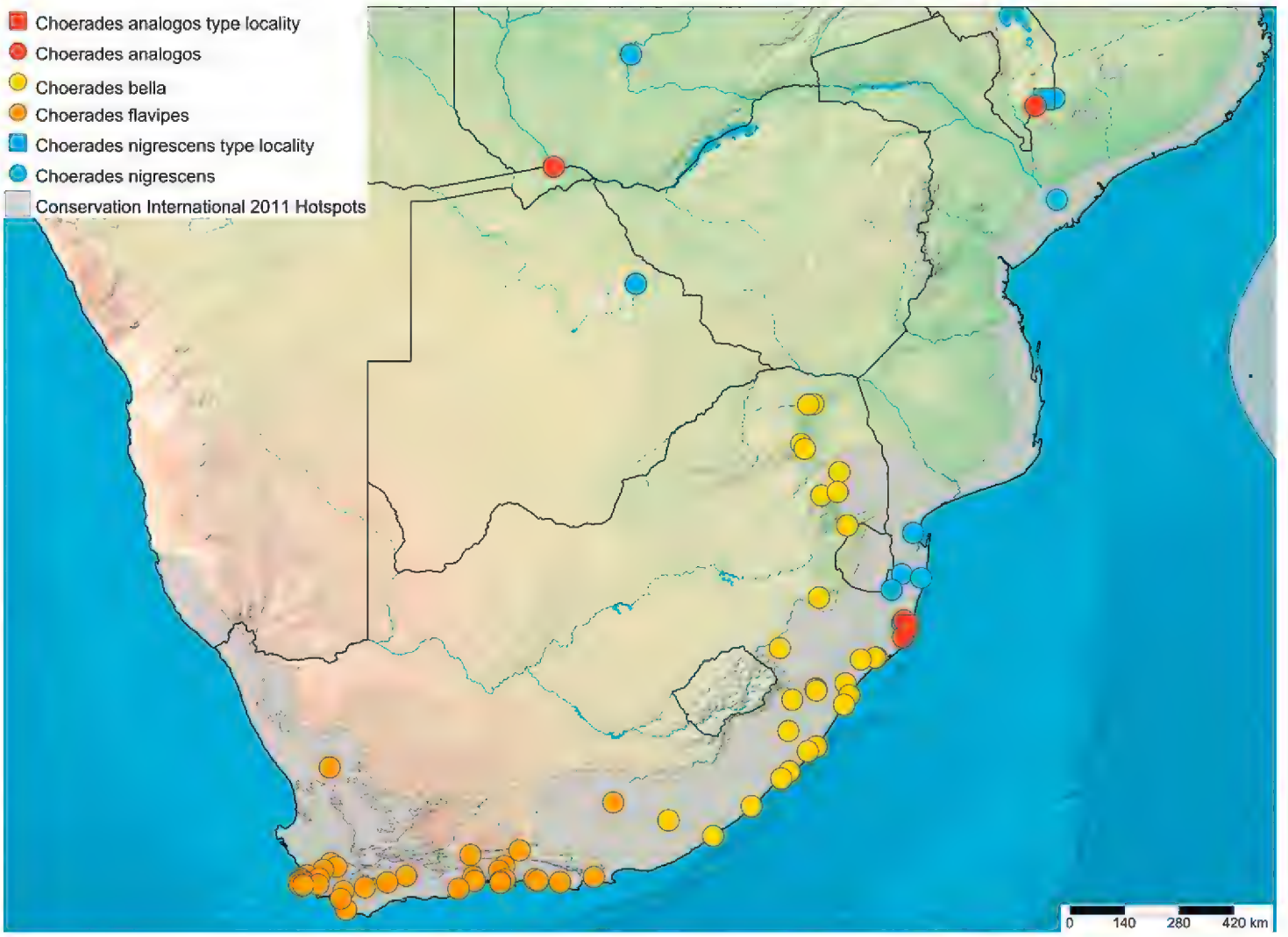


Figure 27. Map of Southern Africa with elevational relief, Biodiversity Hotspots (*sensu* Conservation International), and distribution of *Choerades analogos* sp. n., *C. bella*, *C. flavipes*, and *C. nigrescens* (SimpleMappr 10189, map data also available in Google Earth KML format 10189). Note additional records for *C. analogos* sp. n. in DR Congo and Kenya (Fig. 1).

2940m] / 31.xii.1912 / S.A. Neave', 'Syntype [circular, blue edge] / Syntype / *Laphria* / *nigrescens* Ricardo / det. J.E. Chainey, 1984', 'NHMUK012810461' (BMNH).

Paralectotypes: MALAWI: 1♀ similarly labelled as lectotype 'NHMUK012810462' (BMNH); 2♀ 2♂ 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-58', 'Nyasaland / Mt. Mlanje / 20.xi.1912 / S.A. Neave', 'Syntype [circular, blue edge] / Syntype / *Laphria* / *nigrescens* Ricardo / det. J.E, Chainey, 1984', 'NHMUK012810463, NHMUK012810465, NHMUK012810467 & NHMUK012810469' (BMNH); 1♀ 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-58', 'Nyasaland / Mt. Mlanje / 27.xii.1912 / S.A. Neave', 'Syntype [circular, blue edge] / Syntype / *Laphria* / *nigrescens* Ricardo / det. J.E, Chainey, 1984', 'NHMUK012810464' (BMNH); 1♀ 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-58', 'Nyasaland / Mt. Mlanje / 22.ii.1913 / S.A. Neave', 'Syntype [circular, blue edge] / Syntype / *Laphria* / *nigrescens* Ricardo / det. J.E, Chainey, 1984', 'NHMUK012810466' (BMNH); 1♀ 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-58', 'Nyasaland / Mt. Mlanje / 15.i.1913 / S.A. Neave', 'Syntype [circular, blue edge] / Syntype / *Laphria* / *nigrescens* Ricardo / det. J.E, Chainey, 1984', 'NHMUK012810471' (BMNH).

Other specimens. BOTSWANA: 1♂ 'nr. Nata [*c.* 20°12'38"S, 26°10'38"E 915m] / Bechuanaland [= Botswana] / xii.1954', '*Laphria* / *nigrescens* Ricardo / det. J.E.

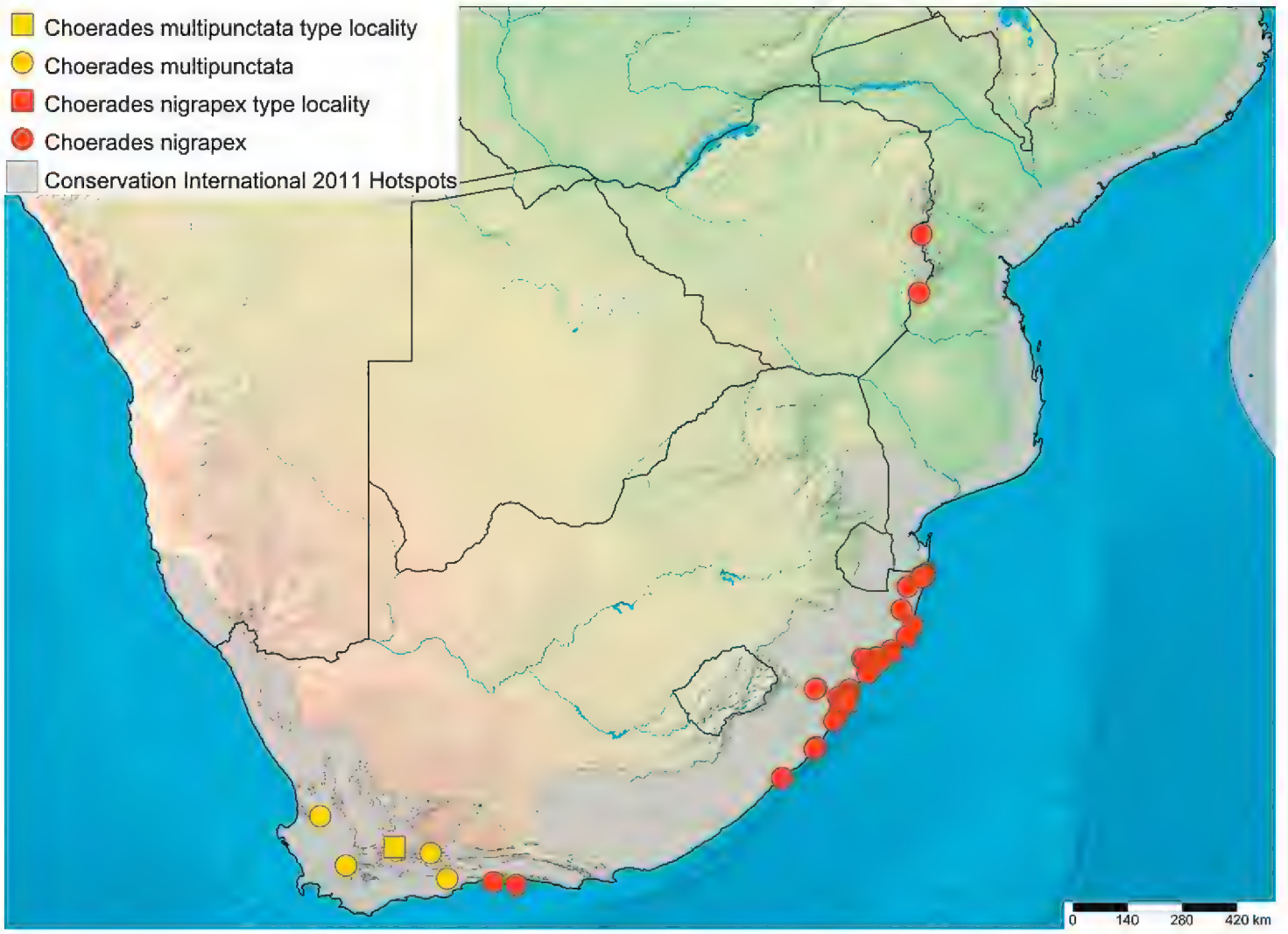


Figure 28. Map of Southern Africa with elevational relief, Biodiversity Hotspots (*sensu* Conservation International), and distribution of *Choerades multipunctata* and *C. nigrapex* (SimpleMappr 10190, map data also available in Google Earth KML format 10190).

Chainey, 1943', 'NHMUK012810861' (BMNH). MALAWI: 1♂ '24.iii.13 / S.A.N.', 'Mlanje / Nyasaland, 1913 / S.A. Neave', 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-340', 'NHMUK012810473' (BMNH); 1♂ 'Nyasaland / Mlanje / J.B. Davey', 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-340', 'NHMUK012810474' (BMNH); 1♂ 'F2 × F3 / Mlanje / Nyasaland / 14.ii.1913 / S.A. Neave', 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-340', 'NHMUK012810475' (BMNH); 1♀ 'F3 × F2 / Mlanje / Nyasaland / 14.ii.1913 / S.A. Neave', 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-340', 'NHMUK012810476' (BMNH); 1♂ 'Mlanje / Nyasaland / 12.ii.1914 / S.A. Neave', 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-340', 'NHMUK012810477' (BMNH). MOZAMBIQUE: 1♀ 'D x D1 / 28.xi.13', 'Portug. E. Afr. [Mozambique] / E. of Mt. Mlanje [*c.* 15°55'20"S, 35°50'22"E 680m] / S.A. Neave', 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-340', 'NHMUK012810859' (BMNH); 1♀ 'D1 × D / 28.xi.13', 'Portug. E. Afr. / E. of Mt. Mlanje / S.A. Neave', 'Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1923-340', 'NHMUK012810860' (BMNH).

Distribution, phenology and biology. A relatively poorly-collected species with a Southern African distribution extending from central Mozambique to the north-eastern parts of the KwaZulu-Natal Province in South Africa (Fig. 27). Data indicate that adults have a relatively short period of activity ranging from November through

to January (Table 1). The species apparently inhabits indigenous forest habitats. *C. nigrescens* occurs in two biodiversity hotspots *sensu* Conservation International (Maputaland-Pondoland-Albany and Coastal Forests of Eastern Africa), but is primarily distributed outside of them. Nothing is known of the biology.

Key to species of Southern African *Choerades*

1	Anatergites laterally at least weakly setose **2**
–	Anatergites asetose **3**
2	Katatergal setae predominantly or entirely black; dorsal facial protuberance black setose; cervical sclerite black setose ..... ***C. nigrapex***
–	Katatergal setae predominantly or entirely white; dorsal facial protuberance predominantly white setose; cervical sclerite predominantly or entirely white setose ..... ***C. nigrescens***
3	Apical scutellar macrosetae entirely or extensively yellow; lateral scale-like facial setae glistening gold ..... ***C. bella***
–	Apical scutellar macrosetae black, white or mixed black and white; lateral scale-like facial setae glistening silver **4**
4	Femora at least partly yellowish ..... ***C. flavipes***
–	Femora entirely black **5**
5	Small species (wing length < 10 mm); restricted to south-western South Africa (Western Cape) Fig. 28 ..... ***C. multipunctata***
–	Large species (wing length > 10 mm); restricted to eastern South Africa (KwaZulu-Natal) and north-eastern Namibia Fig. 27..... ***C. analogos* sp. n.**

An online, illustrated version of this key is available at http://keys.lucidcentral.org/keys/phoenix/choerades/.

Discussion

Although *Choerades* is a fairly large and widely distributed Afrotropical genus in need of modern taxonomic revision, the Southern African species are reasonably well represented in collections. There are only six species presently recognized from the sub-region, and available material allows for the generation of reasonably good distribution maps. Only two species (*analogos* sp. n. and *nigrescens*) have so far been recorded beyond the sub-region, but far more information about this species is required. Three of the six species (*bella*, *flavipes*, *multipunctata*) are currently endemic to South Africa, while the others have also been recorded from neighbouring countries. Very little biological data exist. While most Afrotropical species are usually associated with indigenous forests, where adults are usually found perching on leaves in sunny patches, it appears that two

of the South African species (*multipunctata*, *nigrapex*) inhabit somewhat drier environments. Interestingly, these two species are, like the other Southern African species, summer active even though they inhabit areas that experience winter rainfall. An adult of *C. flavipes*, pinned with its pupal exuvium together with a note reporting that it was removed from the wood of a Silver Tree (Proteaceae, *Leucodendron argenteum*) is evidence that the genus, like many other genera within the Laphriinae, utilizes rotting wood as a larval environment. All six species occur within biodiversity hotspots *sensu* Conservation International and two are endemic to these hotspots, *i.e.*, *C. flavipes* to Cape Floristic Region, Maputaland-Pondoland-Albany, and Succulent Karoo (Fig. 27) and *C. multipunctata* to Cape Floristic Region and Succulent Karoo (Fig. 28). *Choerades nigrapex* is almost endemic to biodiversity hotspots as it occurs in the Maputaland-Pondoland-Albany, Cape Floristic Region, and Eastern Afromontane biodiversity hotspot, but has been collected at a single locality outside of the latter hotspot. Only four prey records are available which feature four different insect orders – Hemiptera (Flatidae), Diptera (Bibionidae), Hymenoptera (Formicidae) and Coleoptera (unidentified family). It appears, therefore, that species of *Choerades* are generalists when it comes to adult diet.

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